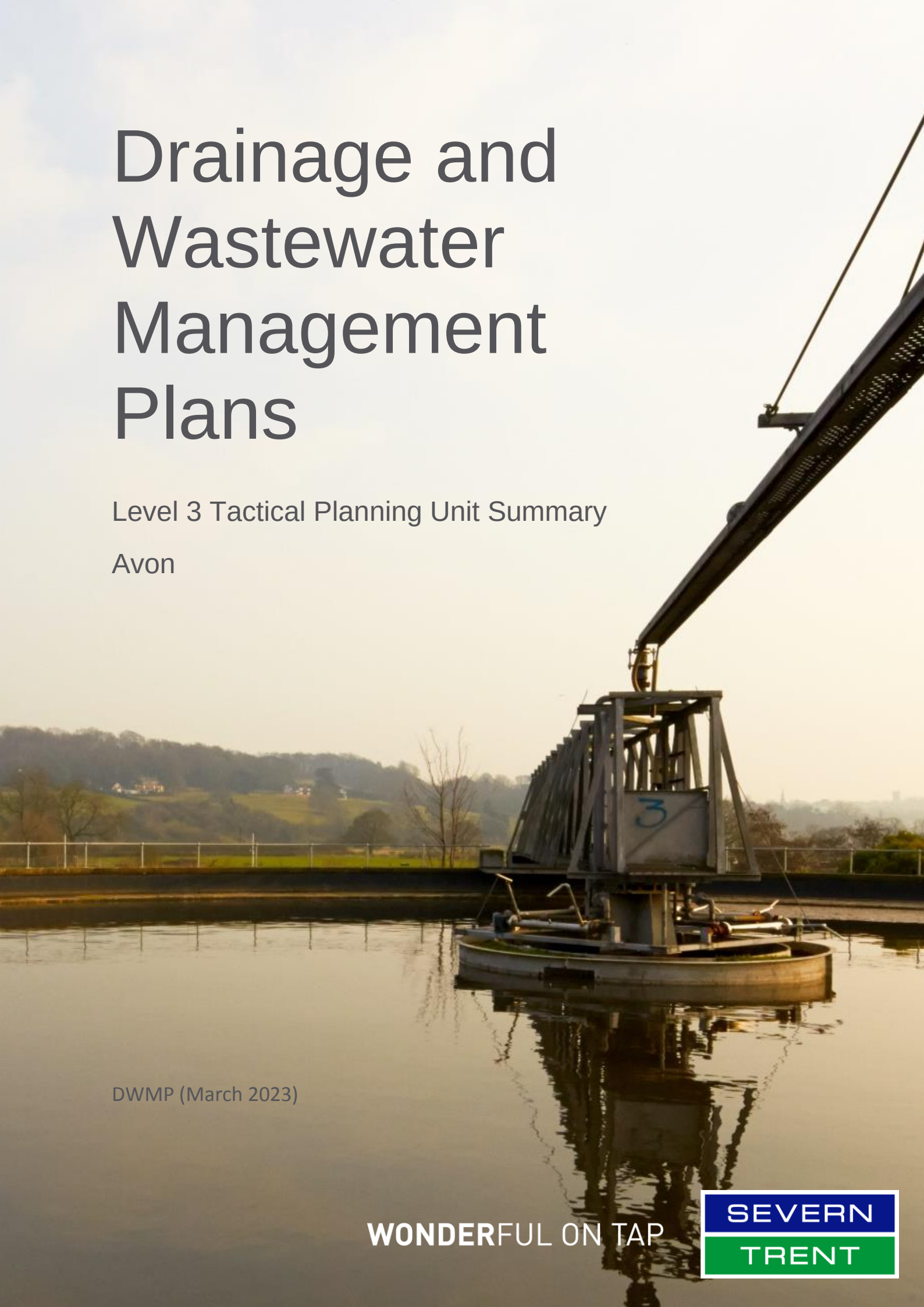
Drainage and Wastewater Management Plans

Level 3 Tactical Planning Unit Summary

Avon



DWMP (March 2023)

WONDERFUL ON TAP

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
ABBOTTS MORTON (10150)

March 2023

WONDERFUL ON TAP

Overview

Abbotts Morton WwTW serves a residential population of 94. Treated effluent is discharged to a tributary of the Piddle Brook.

Key Statistics:

- Residential Population Served: 94
- This is our 635th largest catchment across the whole of Severn Trent, and the 127th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 1.9km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

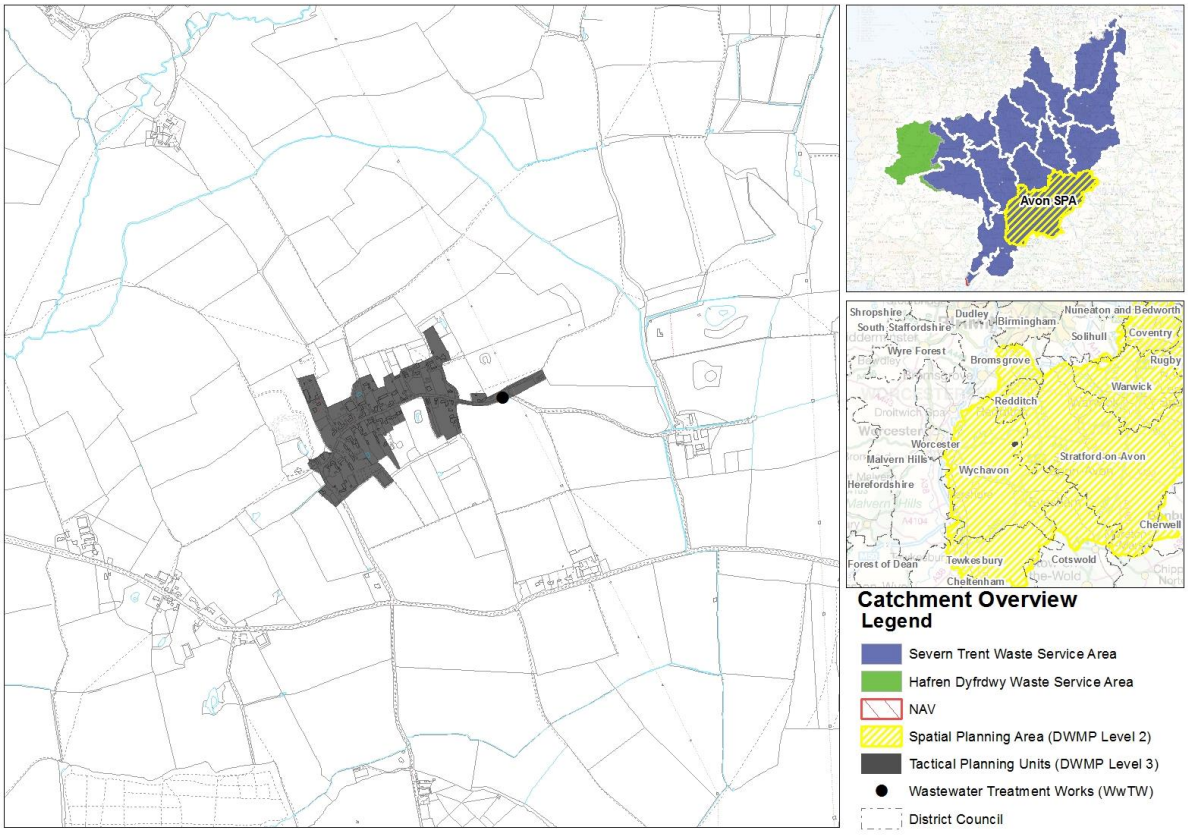
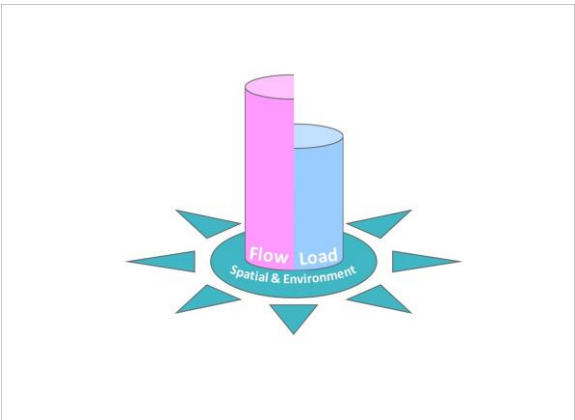


Figure 1 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



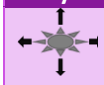
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 2 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 1 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**Yes**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: ADMINGTON (10338)

March 2023

WONDERFUL ON TAP

Overview

Admington WwTW serves a residential population of 88. Treated effluent is discharged to a tributary of the Humber Brook.

Key Statistics:

- Residential Population Served: 88
- This is our 647th largest catchment across the whole of Severn Trent, and the 130th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 2.4km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

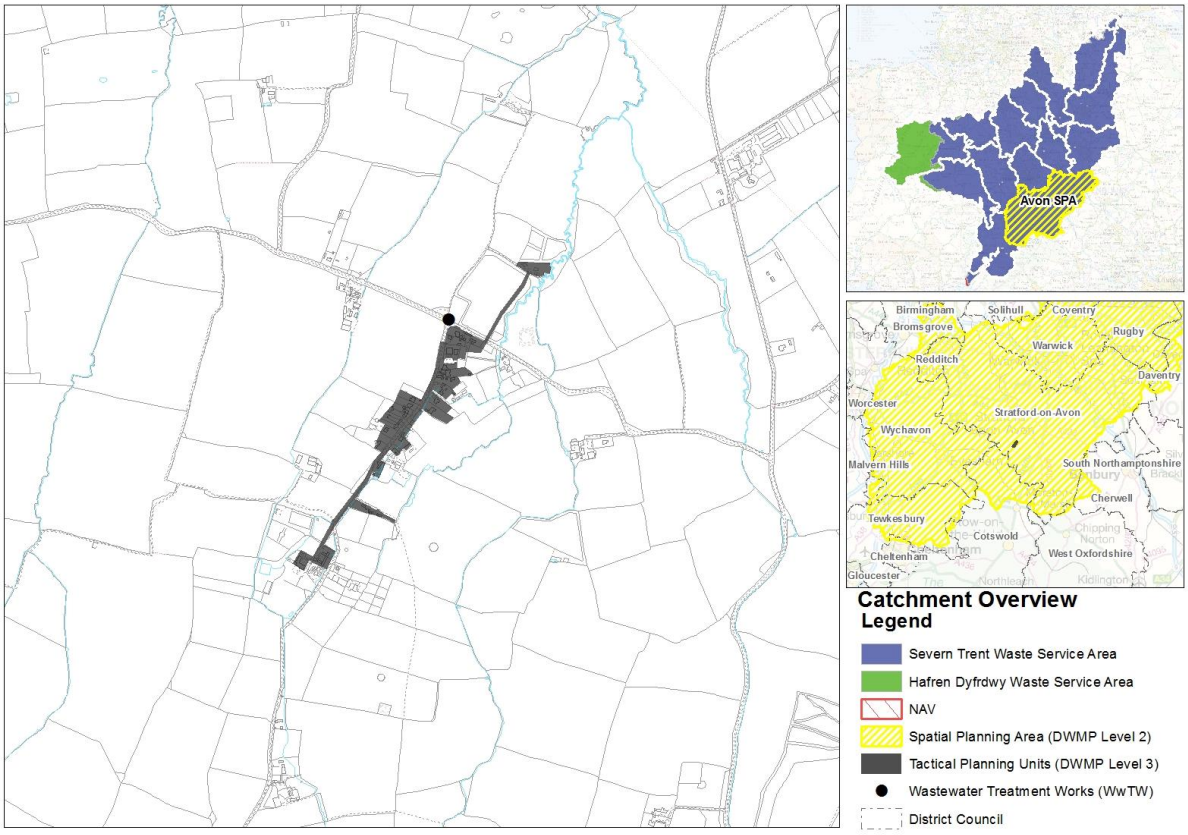
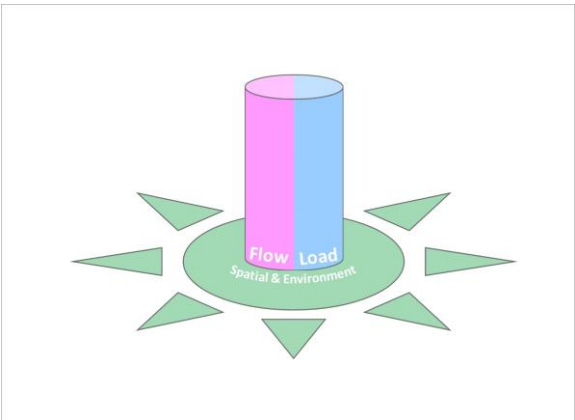


Figure 3 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 4 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 2 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
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15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
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This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

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Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
ALCESTER (10151)

March 2023

WONDERFUL ON TAP

Overview

Alcester WwTW is located to the south of Alcester and serves a residential population of 8,973. Treated effluent is discharged to the River Arrow. In addition to treating flows from Alcester, the catchment also drains the outlying towns of Great Alne and Aston Cantlow to the East (pumped). The bulk of Alcester is gravity and then pumped to the works.

Key Statistics:

- Residential Population Served: 8,973
- This is our 131st largest catchment across the whole of Severn Trent, and the 16th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 87.4km of public foul water sewers and 27.3km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

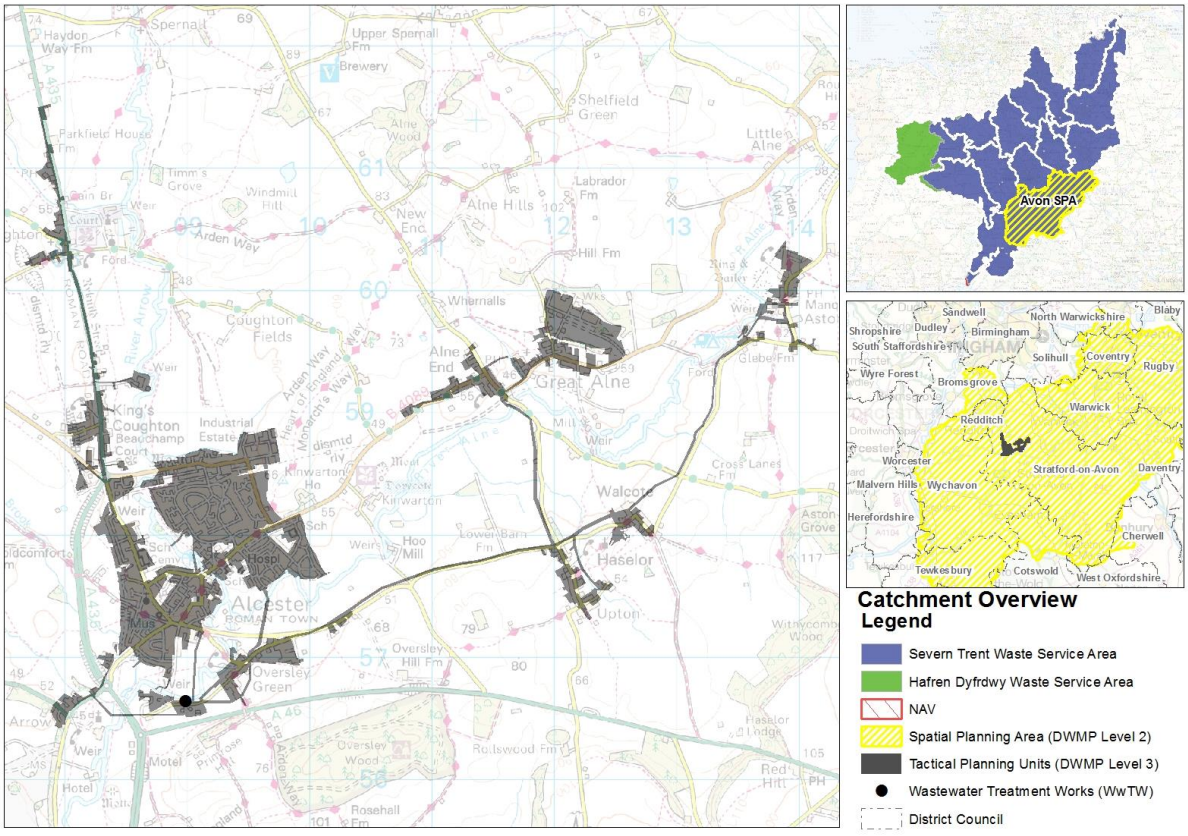
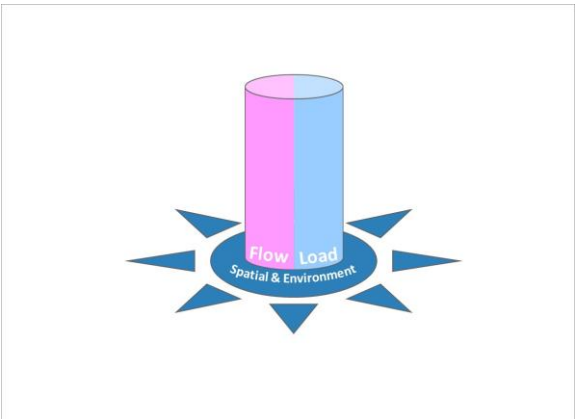


Figure 5 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 6 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 3 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	Yes
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 6 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 4 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 5 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 6 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	1	1	1	1	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	2	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 7 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
ALDERTON (10282)

March 2023

WONDERFUL ON TAP

Overview

Alderton WwTW is located to the north of the village of Alderton and serves a residential population of 1,202. Treated effluent is discharged to the Washbourne Brook. In additional to treating flows from Alderton, the catchment also drains the village of Gretton (gravity).

Key Statistics:

- Residential Population Served: 1,202
- This is our 303rd largest catchment across the whole of Severn Trent, and the 41st largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 17.6km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

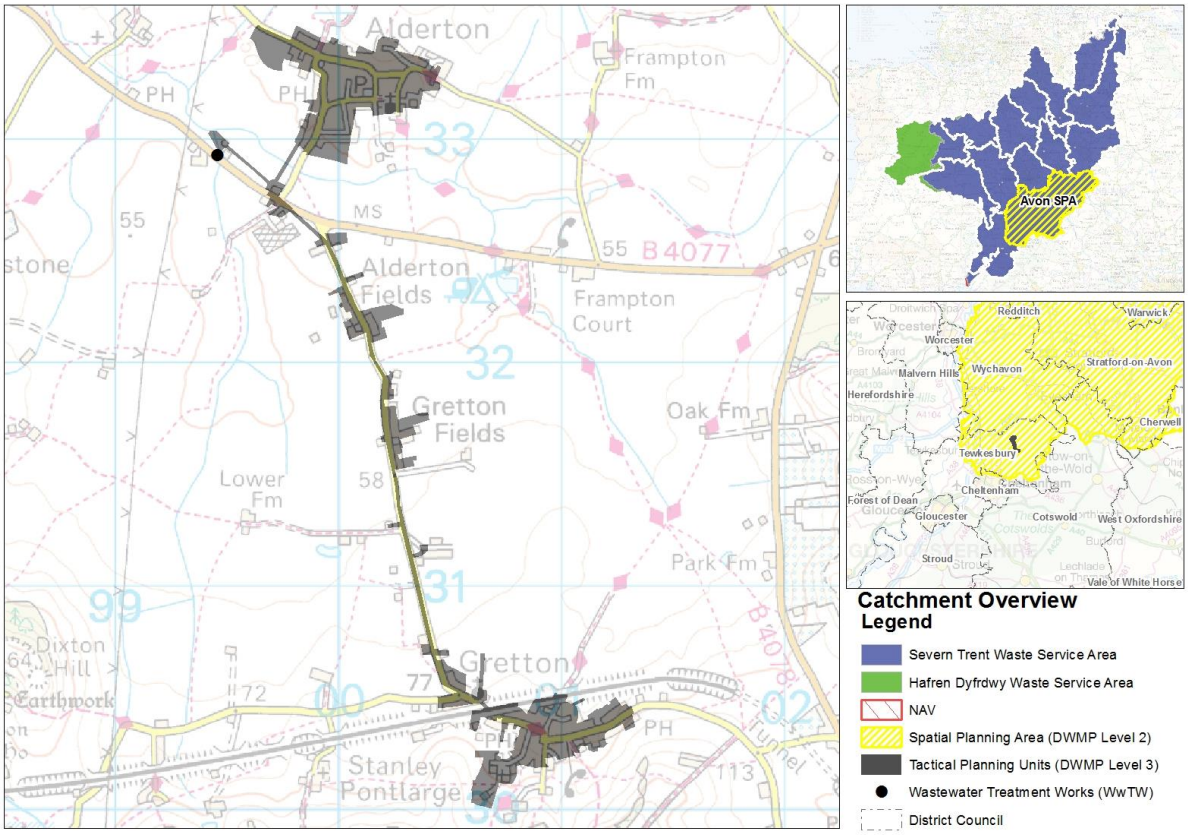
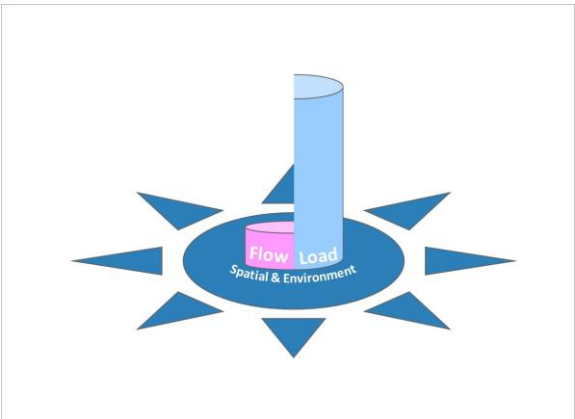


Figure 7 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 8 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 8 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	Yes
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 9 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 10 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 11 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	2	2	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 12 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	✓
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
ALVECHURCH (10152)

March 2023

WONDERFUL ON TAP

Overview

Alvechurch WwTW is located to the south of Alvechurch and serves a residential population of 10,115. Treated effluent is discharged to the River Arrow. In addition to treating flows from Alvechurch, the catchment also drains the outlying village of Rowney Green to the east (gravity). The bulk of Alvechurch is gravity.

Key Statistics:

- Residential Population Served: 10,115
- This is our 119th largest catchment across the whole of Severn Trent, and the 14th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 102.9km of public foul water sewers and 7.8km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

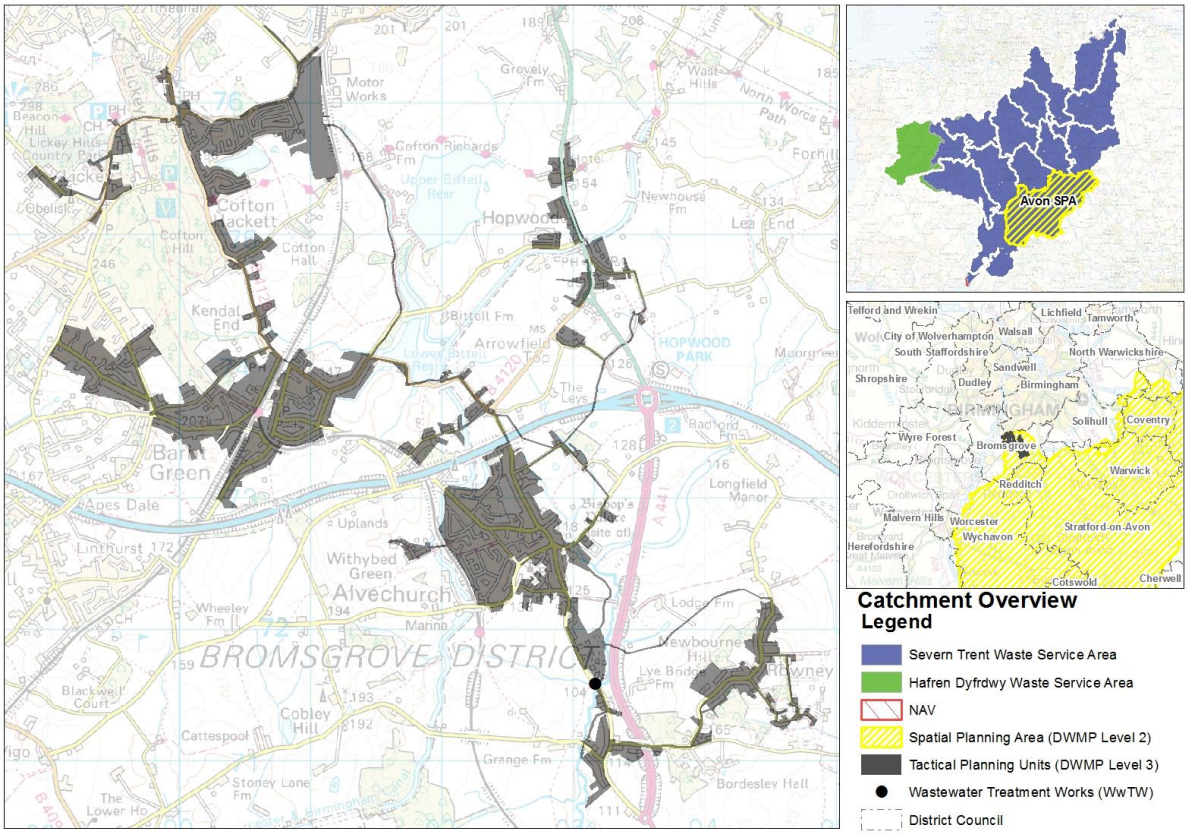
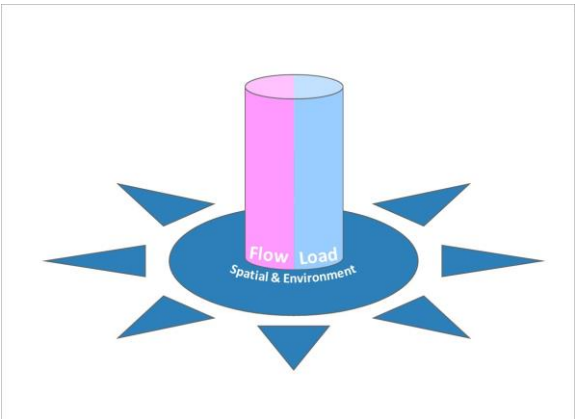


Figure 9 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 10 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 13 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 5 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 14 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 15 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 16 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	1	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 17 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: ASHORNE (10380)

March 2023

WONDERFUL ON TAP

Overview

Ashorne WwTW serves a residential population of 146. Treated effluent is discharged to the Thelsford Brook.

Key Statistics:

- Residential Population Served: 146
- This is our 586th largest catchment across the whole of Severn Trent, and the 119th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 2.2km of public foul water sewers and 1.1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

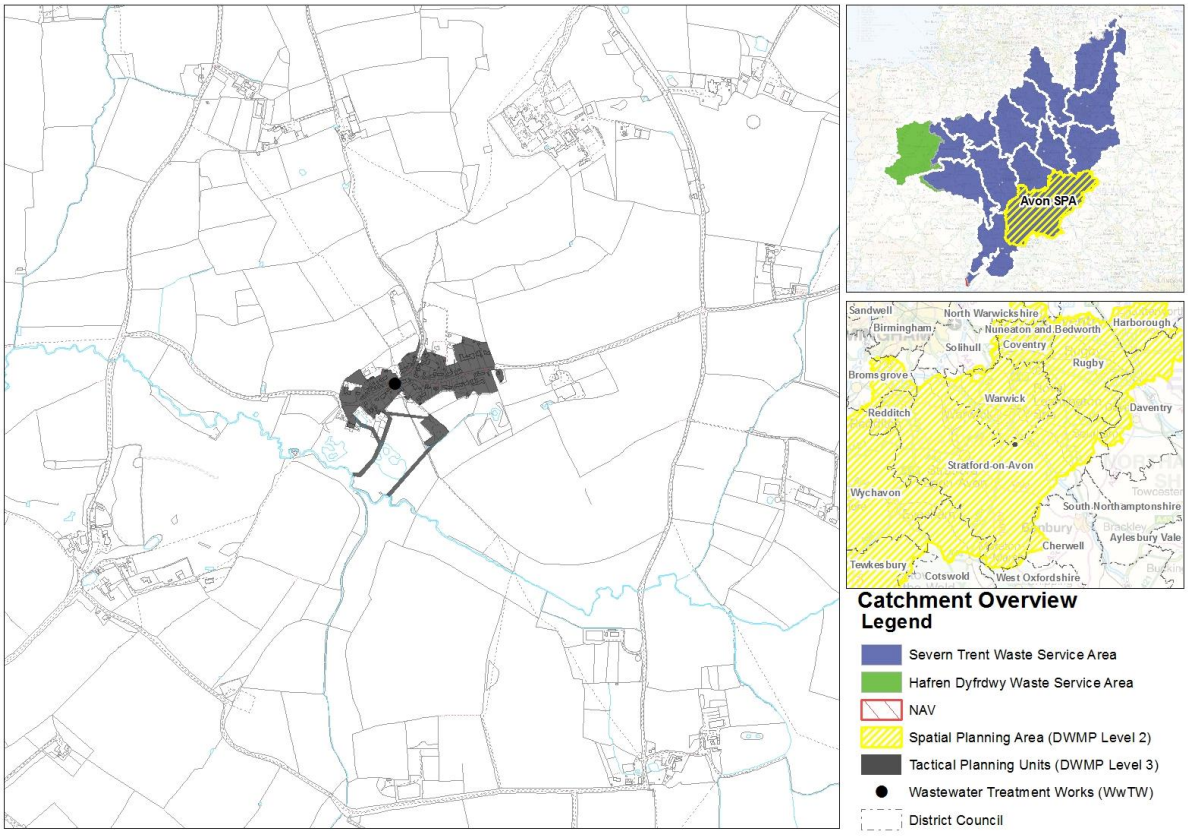
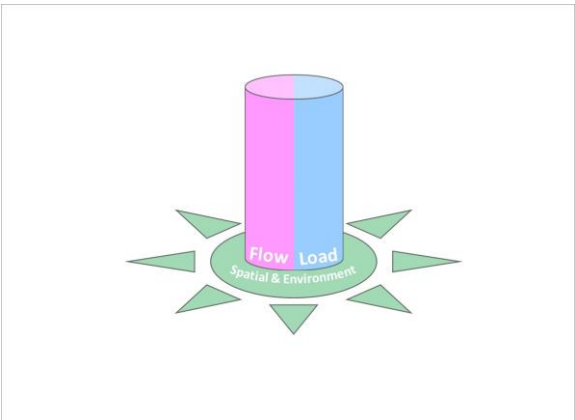


Figure 11 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 12 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 18 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
ASHTON-U-HILL (10265)

March 2023

WONDERFUL ON TAP

Overview

Ashton-U-Hill WwTW is located to the south of Ashton under Hill and serves a residential population of 712. Treated effluent is discharged to the Carrant Brook.

Key Statistics:

- Residential Population Served: 712
- This is our 373rd largest catchment across the whole of Severn Trent, and the 68th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 8.3km of public foul water sewers and 1.2km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

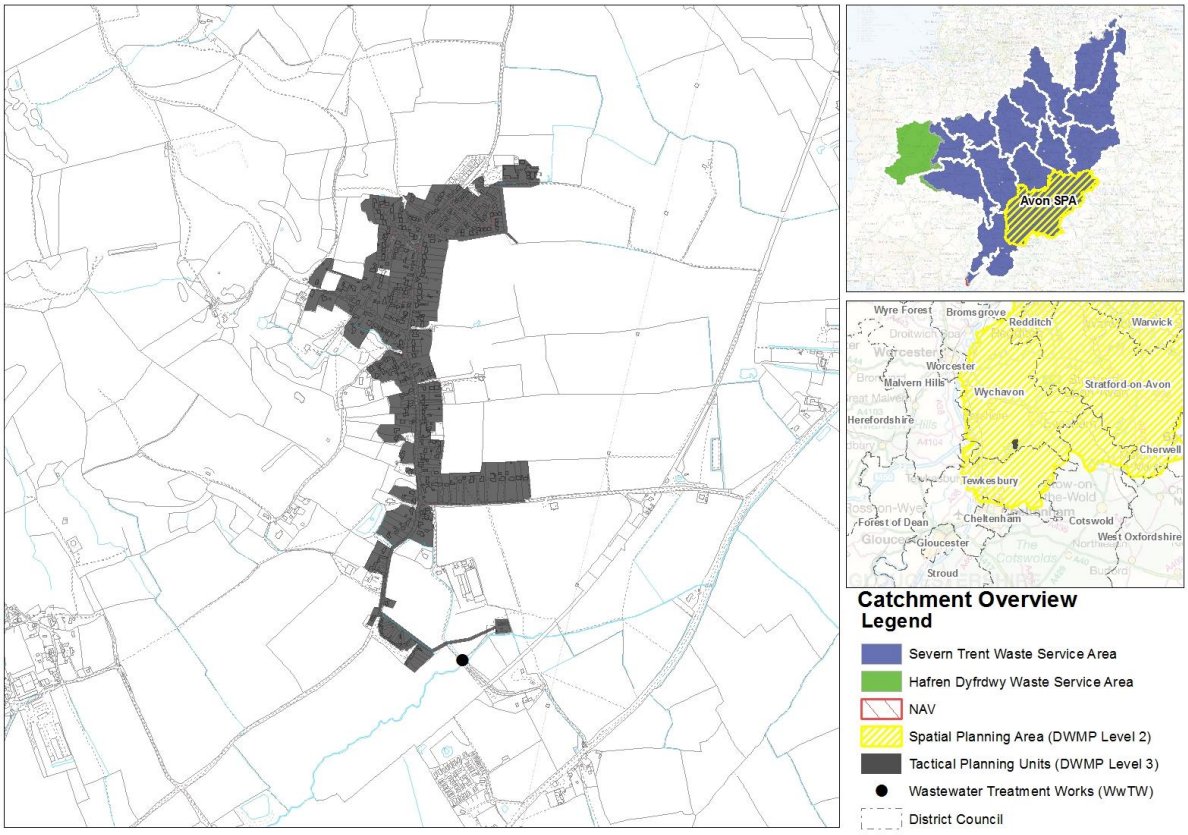


Figure 13 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".

Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 14 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 19 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 20 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 21 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 22 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	2	2	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 23 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
ASTON MAGNA (10317)

March 2023

WONDERFUL ON TAP

Overview

Aston Magna WwTW serves a residential population of 205. Treated effluent is discharged to the Knee Brook.

Key Statistics:

- Residential Population Served: 205
- This is our 546th largest catchment across the whole of Severn Trent, and the 108th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 1.6km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

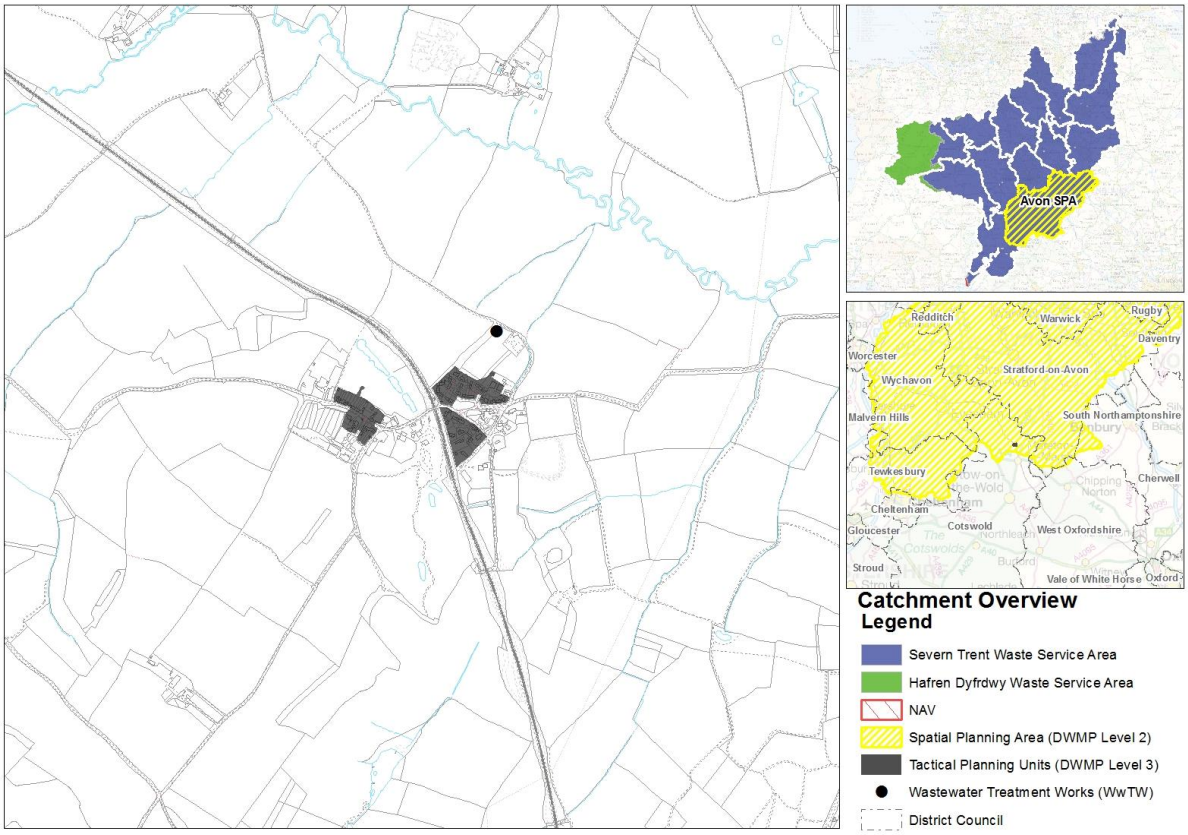
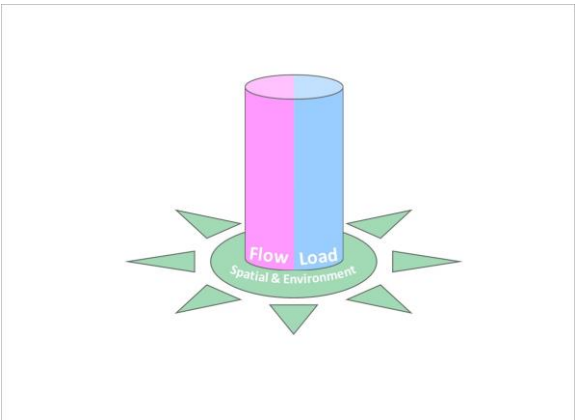


Figure 15 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 16 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 24 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
ASTON SOMERVILLE (10025)

March 2023

WONDERFUL ON TAP

Overview

Aston Somerville WwTW serves a residential population of 229. Treated effluent is discharged to the River Isbourne.

Key Statistics:

- Residential Population Served: 229
- This is our 524th largest catchment across the whole of Severn Trent, and the 102nd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 3.0km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

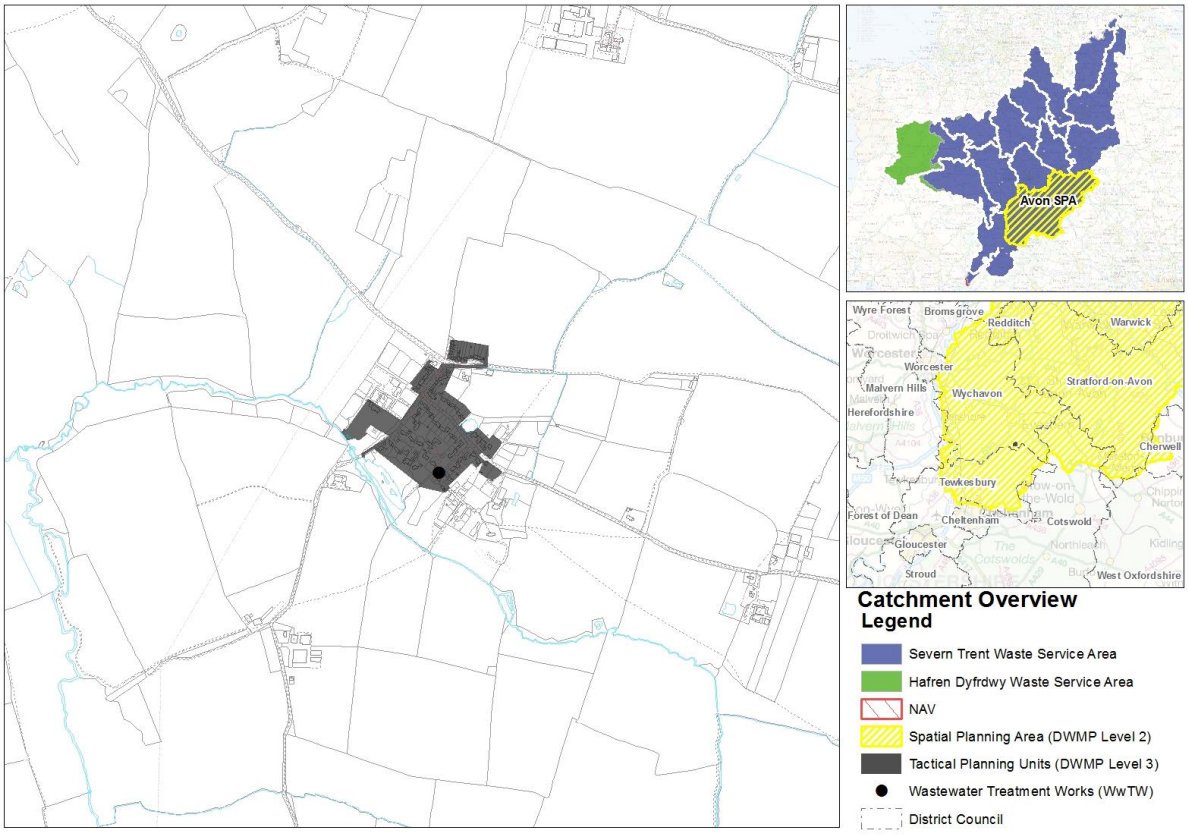
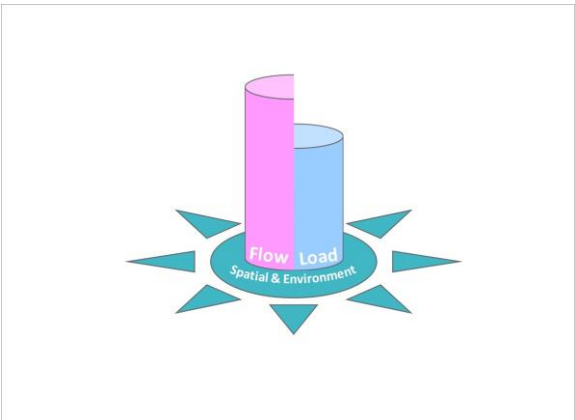


Figure 17 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
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Figure 18 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 25 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
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This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
ASTWOOD BANK (10148)

March 2023

WONDERFUL ON TAP

Overview

Astwood Bank WwTW is located to the west of Astwood Bank and serves a residential population of 2,723. Treated effluent is discharged to the Doe Bank Brook. Flows from Astwood Bank arrive by gravity.

Key Statistics:

- Residential Population Served: 2,723
- This is our 221st largest catchment across the whole of Severn Trent, and the 27th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 18.7km of public foul water sewers and 6.6km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

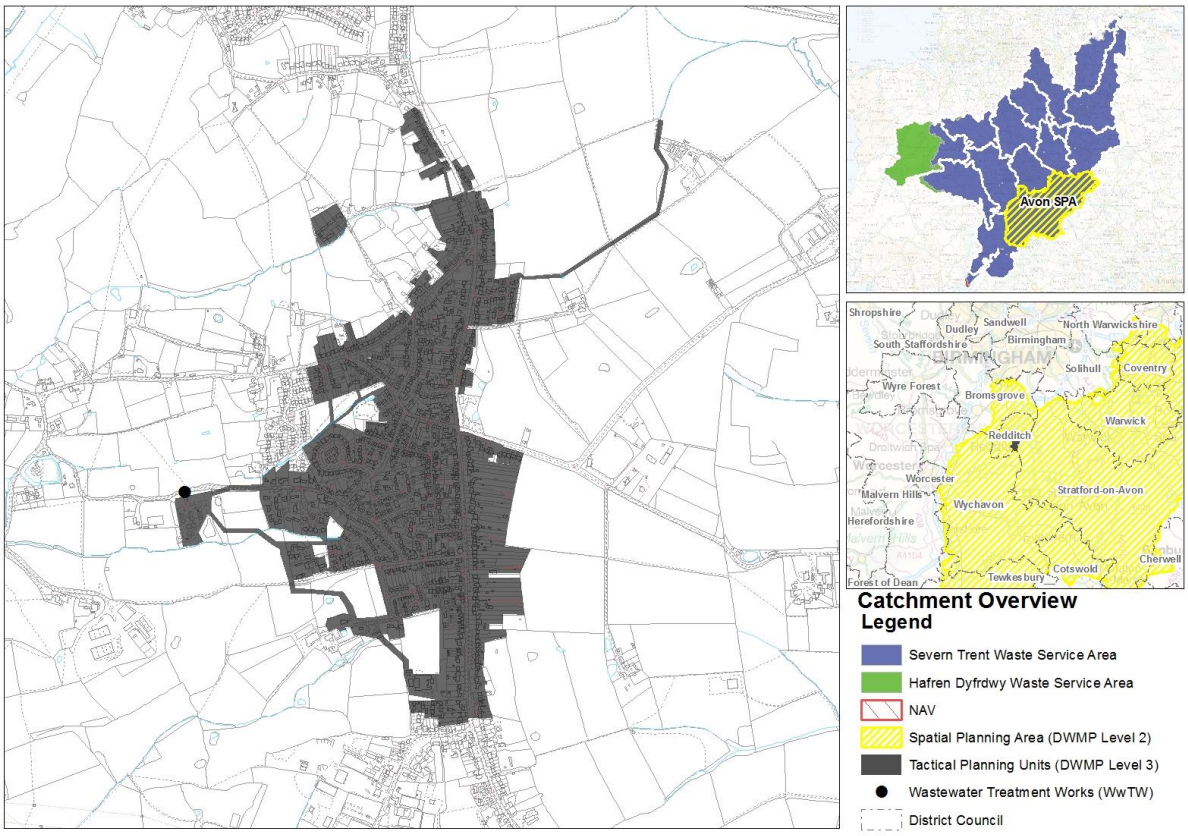
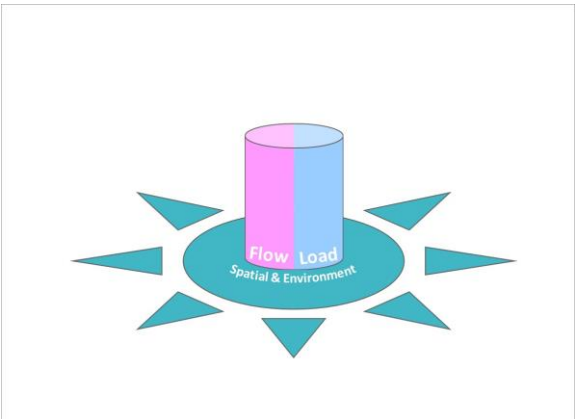


Figure 19 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 20 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 26 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 4 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 27 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 28 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 29 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 30 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: BASCOTE (10381)

March 2023

WONDERFUL ON TAP

Overview

Bascote WwTW serves a residential population of 81. Treated effluent is discharged to a tributary of the River Itchen.

Key Statistics:

- Residential Population Served: 81
- This is our 661st largest catchment across the whole of Severn Trent, and the 133rd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 6.2km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

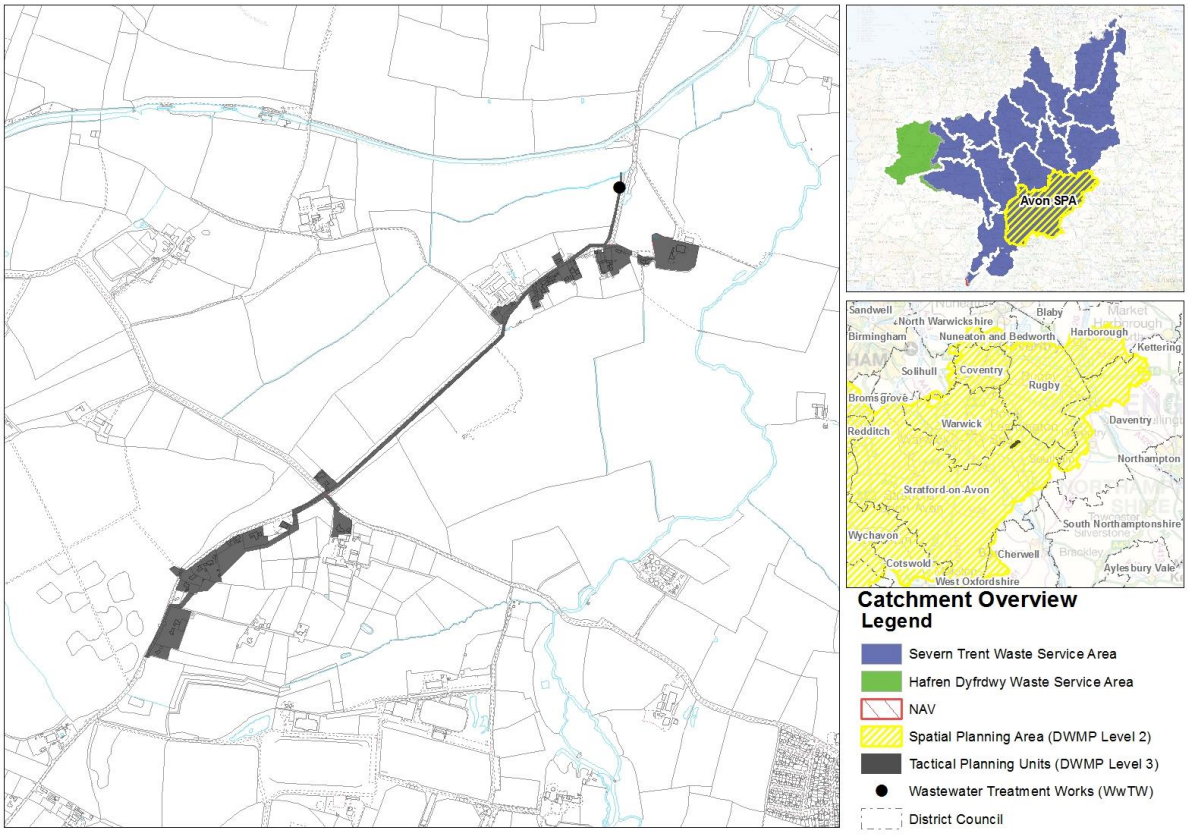
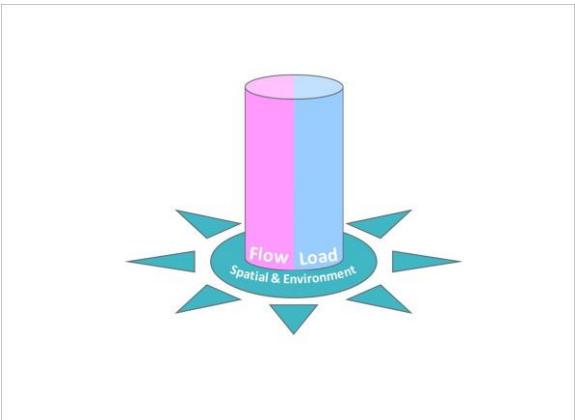


Figure 21 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 22 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 31 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Whilst the catchment triggered through the RBCS assessment, a pre-BRAVA review of the catchment indicated that the triggers were miss-representative of the long-term catchment risk. A decision was subsequently taken to downgrade the RBCS risk, resulting in the catchment not progressing any further along the DWMP process.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
BEARLEY (10318)

March 2023

WONDERFUL ON TAP

Overview

Bearley WwTW is located to the west of Bearley and serves a residential population of 654. Treated effluent is discharged to a tributary of the Edstone Brook.

Key Statistics:

- Residential Population Served: 654
- This is our 384th largest catchment across the whole of Severn Trent, and the 71st largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 12.5km of public foul water sewers and 1.6km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

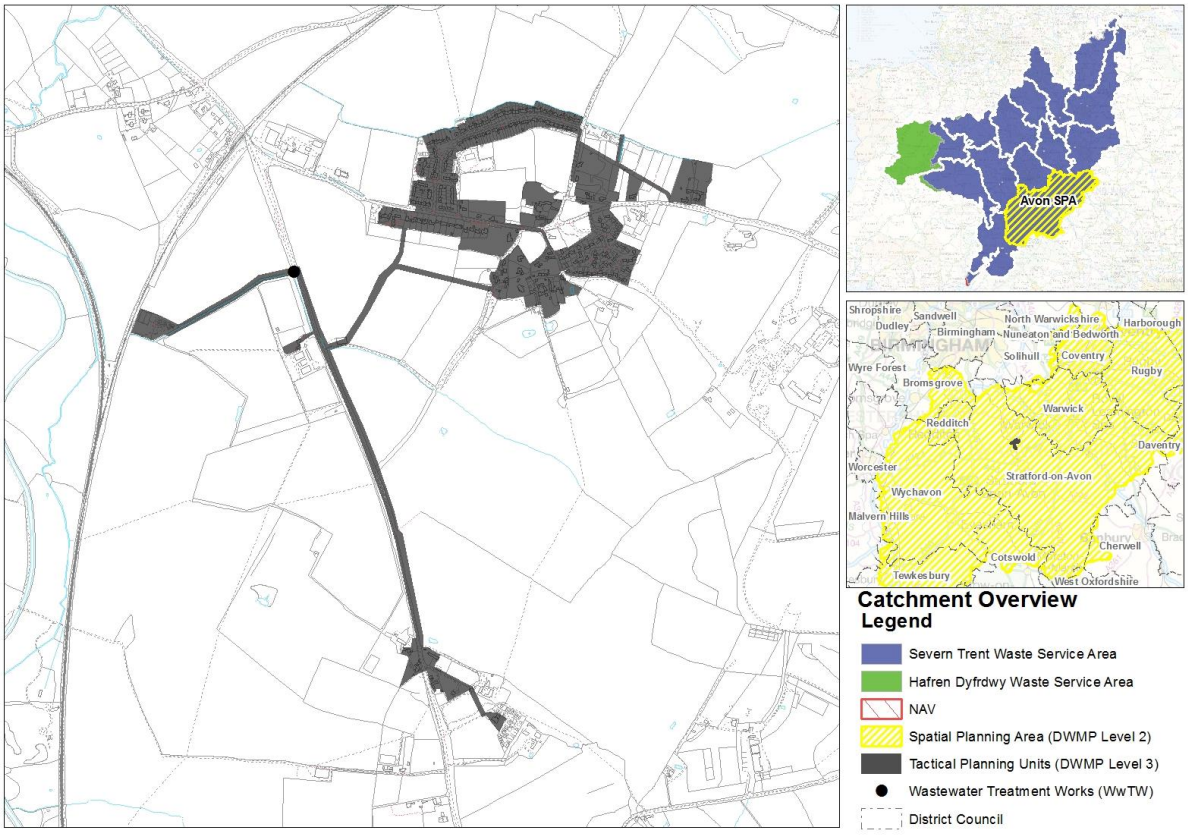
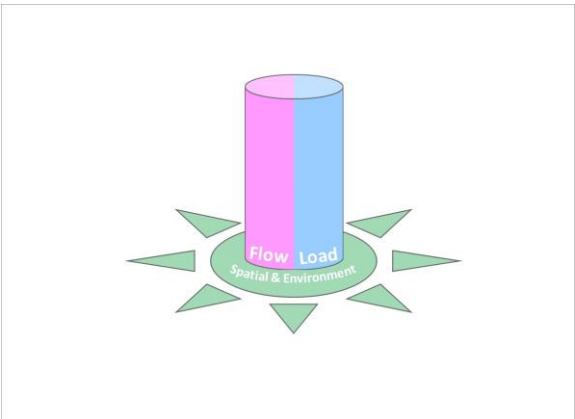


Figure 23 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 24 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 32 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
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11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
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13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 33 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 34 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 35 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 36 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: BECKFORD (10285)

March 2023

WONDERFUL ON TAP

Overview

Beckford WwTW is located to the west of Beckford and serves a residential population of 917. Treated effluent is discharged to the Carrant Brook. In addition to treating flows from Beckford (gravity) it also drains the outlying villages of Teddington and Alstone to the south (pumped).

Key Statistics:

- Residential Population Served: 917
- This is our 339th largest catchment across the whole of Severn Trent, and the 55th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 23.4km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

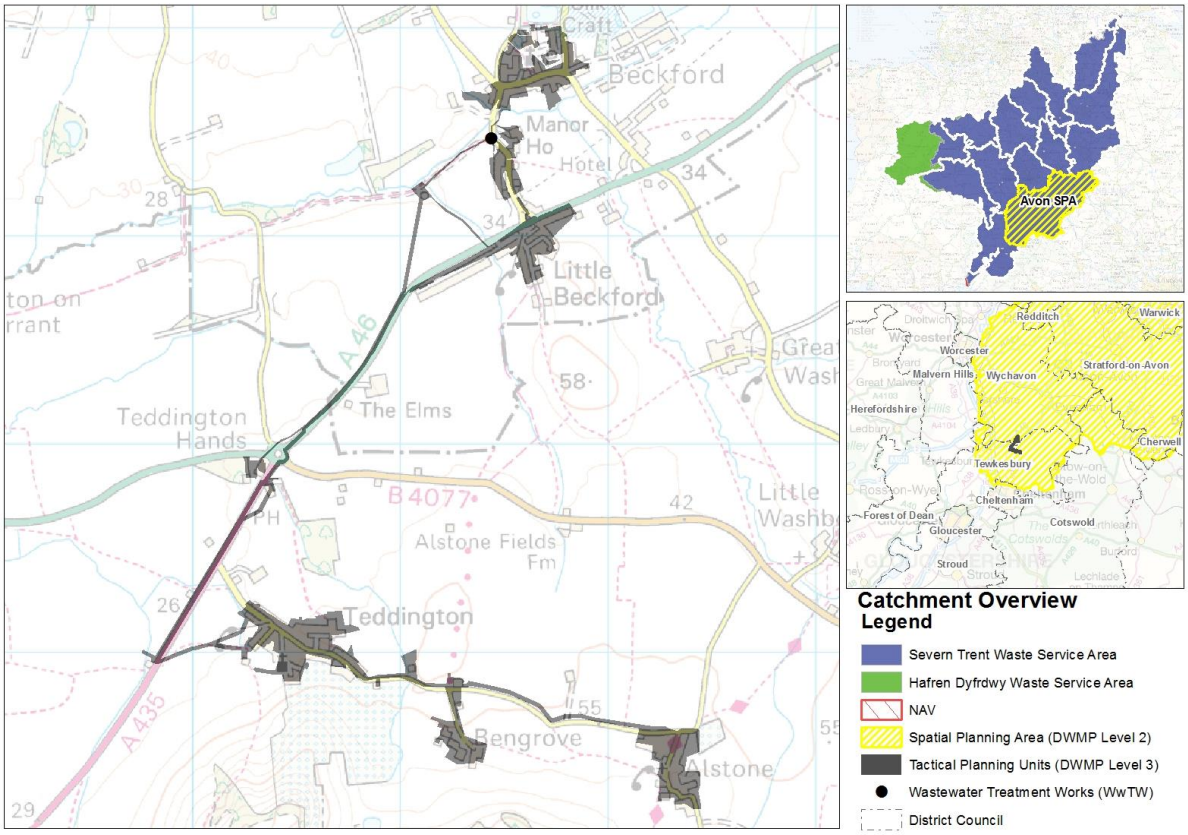
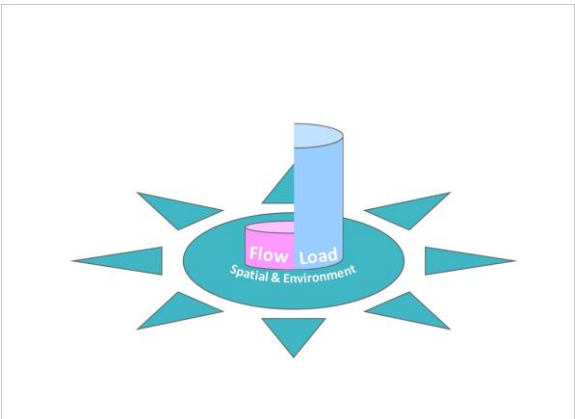


Figure 25 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 26 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 37 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 38 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 39 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 40 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	2	2	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	1	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 41 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
BEDWORTH (MARSTON LANE) (10454)

March 2023

WONDERFUL ON TAP

SEVERN TRENT

Overview

Bedworth (Marston Lane) WwTW is located to the north east of Bedworth and serves a residential population of 9,885. Treated effluent is discharged locally. It is mainly a gravity system.

Key Statistics:

- Residential Population Served: 9,885
- This is our 126th largest catchment across the whole of Severn Trent, and the 15th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 52.5km of public foul water sewers and 38.8km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

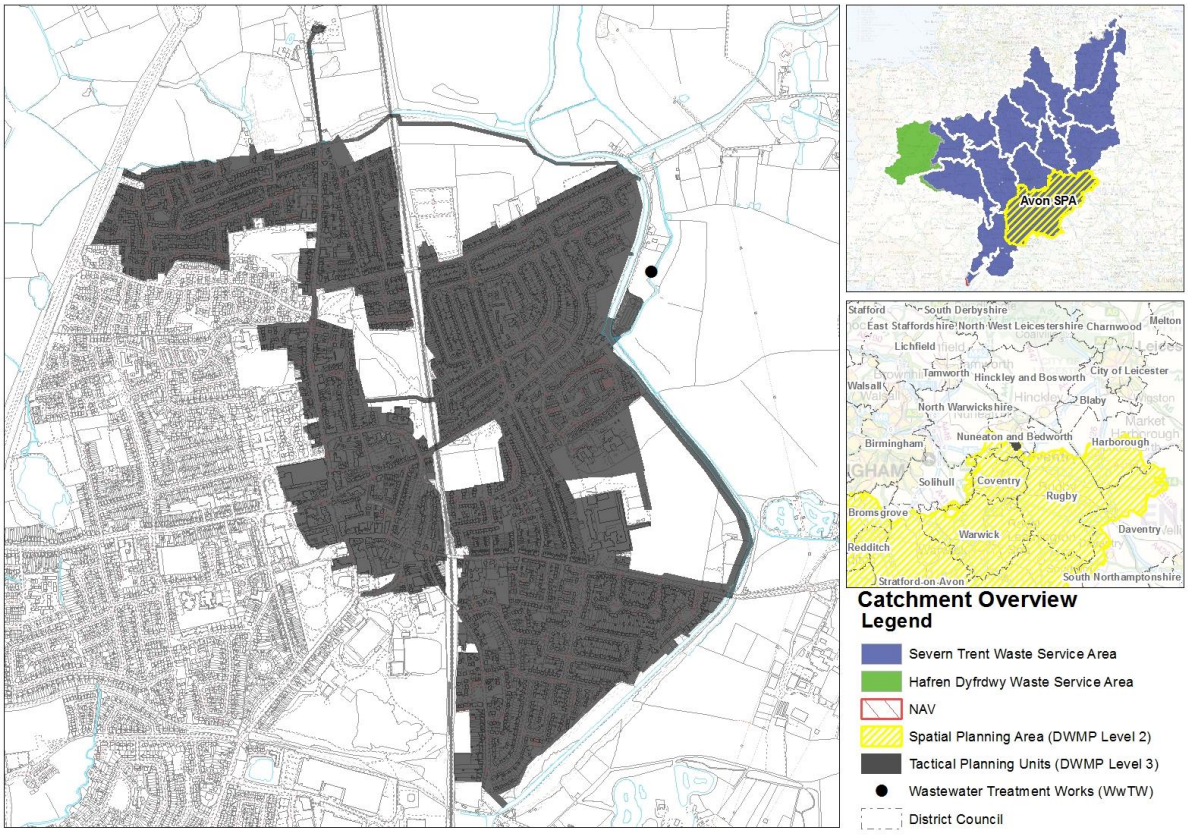
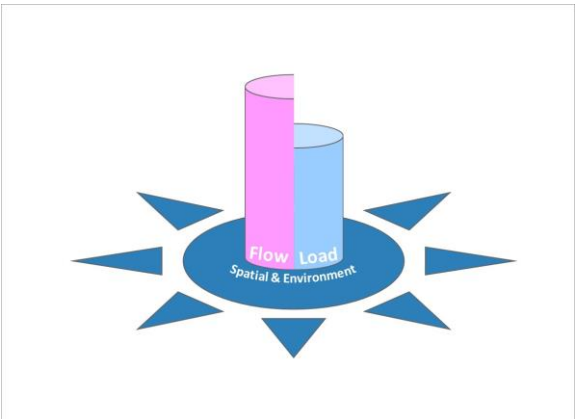


Figure 27 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 28 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 42 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	Yes
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 4 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 43 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 44 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 45 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	2	2	2	2	2	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	1	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 46 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	✓✓
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
BIDFORD-ON-AVON (10154)

March 2023

WONDERFUL ON TAP

Overview

Bidford-On-Avon WwTW is located to the south west of Bidford-upon-Avon and serves a residential population of 8,248. Treated effluent is discharged to the River Avon. It treats flows from Cleeve Prior form the South (pumped), Salford Prior from the West (pumped) and Wixford from the north (pumped).

Key Statistics:

- Residential Population Served: 8,248
- This is our 136th largest catchment across the whole of Severn Trent, and the 17th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 99.4km of public foul water sewers and 19.7km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

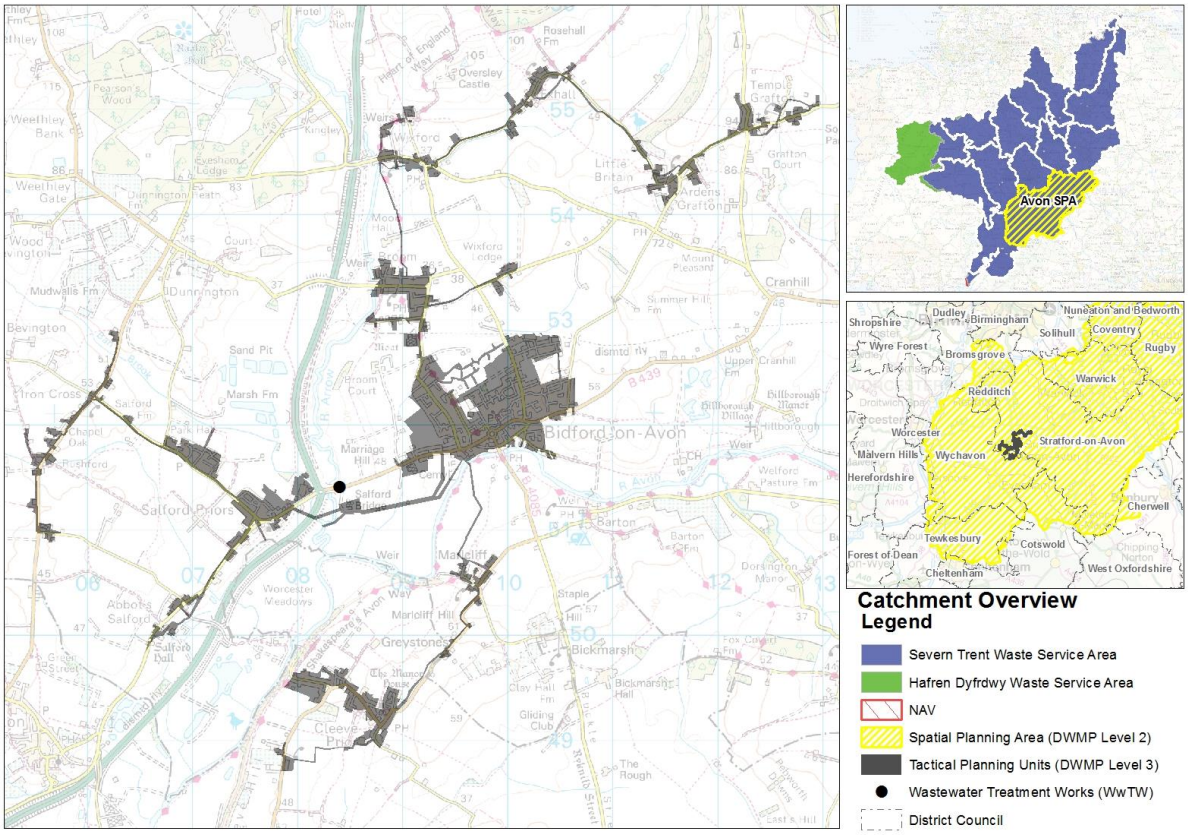
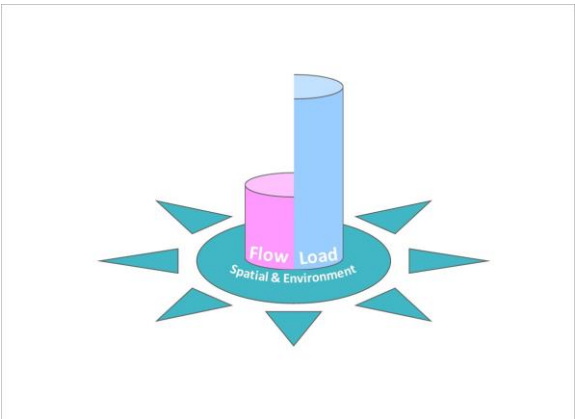


Figure 29 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 30 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 47 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	Yes
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 5 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 48 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 49 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 50 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	2	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	1	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 51 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
BIRLINGHAM (14761)

March 2023

WONDERFUL ON TAP

Overview

Birlingham WwTW serves a residential population of 206. Treated effluent is discharged to the River Avon.

Key Statistics:

- Residential Population Served: 206
- This is our 544th largest catchment across the whole of Severn Trent, and the 107th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 5.5km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

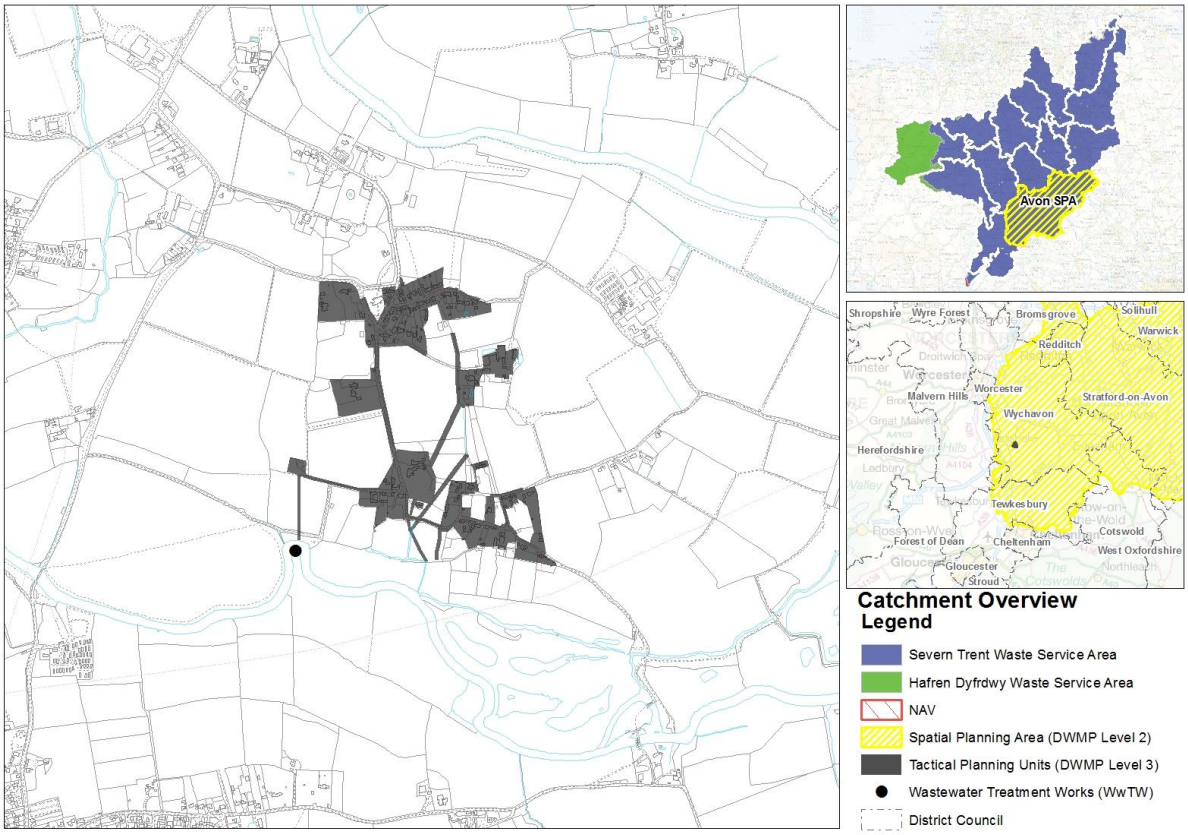
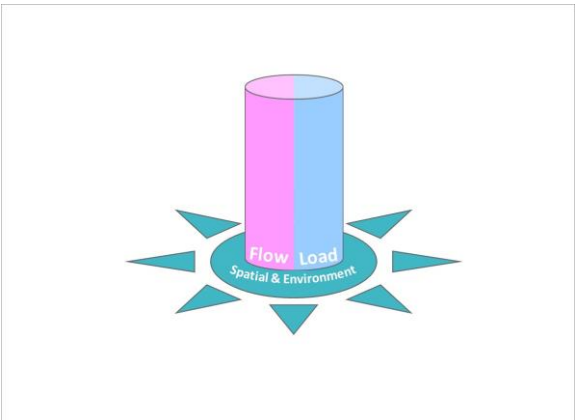


Figure 31 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 32 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 52 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: BISHAMPTON (10026)

March 2023

WONDERFUL ON TAP

Overview

Bishampton WwTW is located to the north of Bishampton and serves a residential population of 743. Treated effluent is discharged to the Whitsun Brook. In addition to treating flows from Bishampton (gravity) it also drains the outlying village of Abberton to the north (pumped).

Key Statistics:

- Residential Population Served: 743
- This is our 368th largest catchment across the whole of Severn Trent, and the 66th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 11.0km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

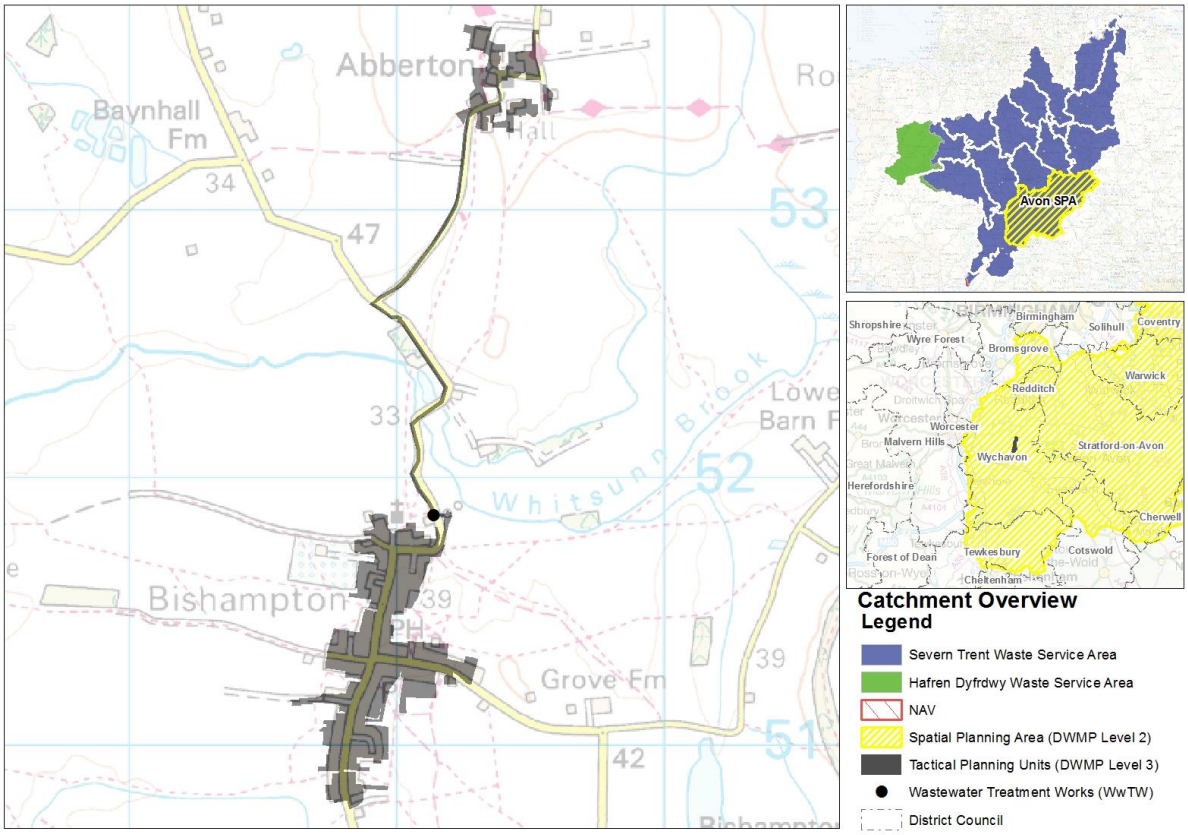
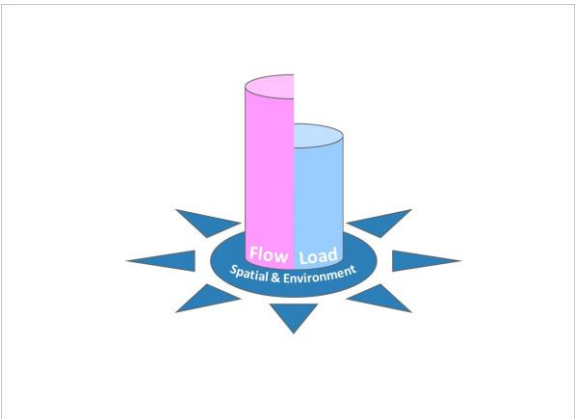


Figure 33 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



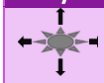
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 34 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 53 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
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Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 54 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 55 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 56 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	2	2	2	2	2	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 57 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
BLACKMINSTER (10027)

March 2023

WONDERFUL ON TAP

Overview

Blackminster WwTW is located to the north west of Evesham and serves a residential population of 15,668. Treated effluent is discharged to the Badsey Brook. It treats flows from Badsey, Bretforton and Wickhamford to the south (gravity). It also drains the villages of North, Middle and South Littleton to the north (gravity).

Key Statistics:

- Residential Population Served: 15,668
- This is our 89th largest catchment across the whole of Severn Trent, and the 9th largest in the Avon Stategic Planning Area making up 1% of its population.
- It has 104.2km of public foul water sewers and 10.4km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

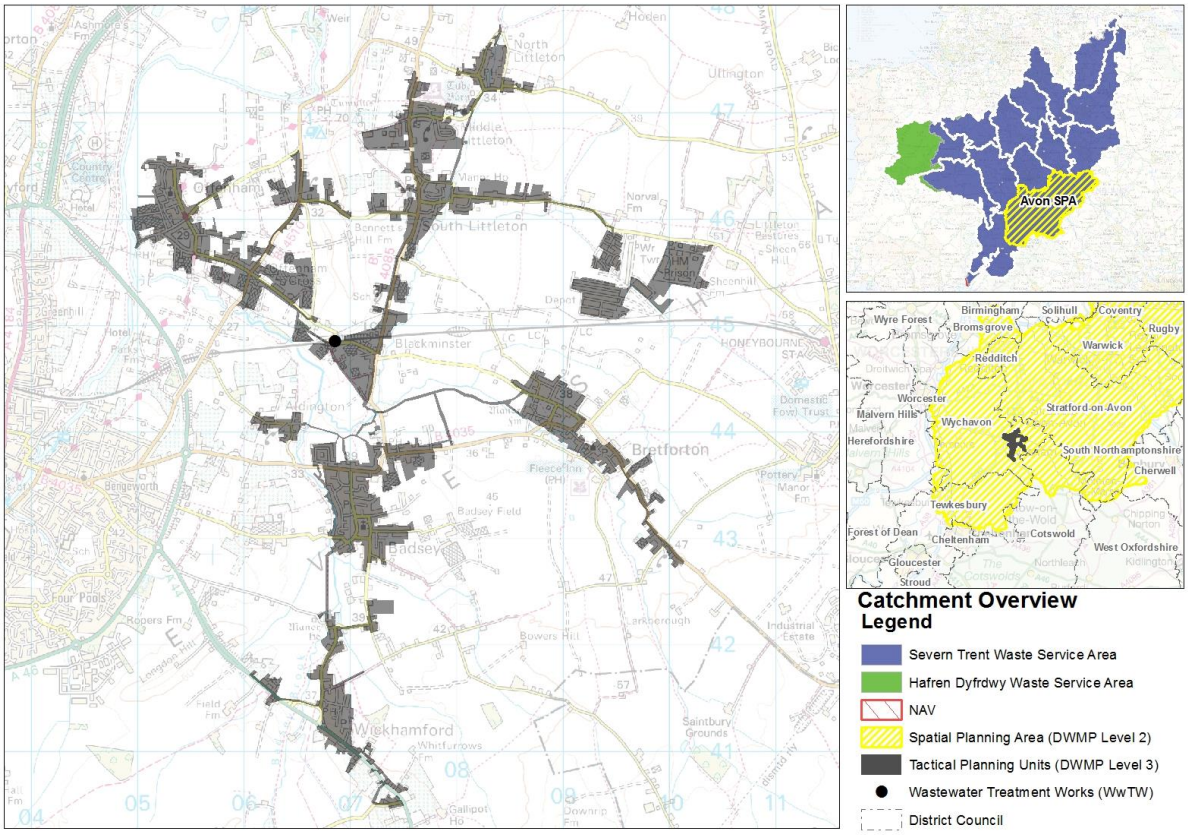
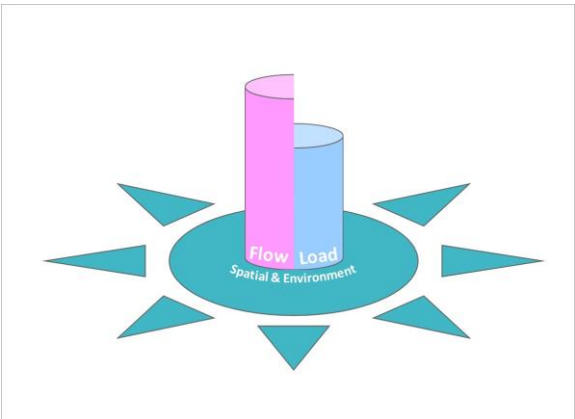


Figure 35 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 36 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 58 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	Yes
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	Yes
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 5 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 59 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 60 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 61 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 62 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: BLOCKLEY (10329)

March 2023

WONDERFUL ON TAP

Overview

Blockley WwTW (also known as Draycott WwTW) is located to the north of the village of Draycott and serves a residential population of 1,917. Treated effluent is discharged to the Blockley Brook. The catchment drains the villages of Blockley and Draycott to the south by gravity, and receives pumped flow from the north from the villages of Paxford and Ebrington.

Key Statistics:

- Residential Population Served: 1,917
- This is our 261st largest catchment across the whole of Severn Trent, and the 34th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 39.5km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

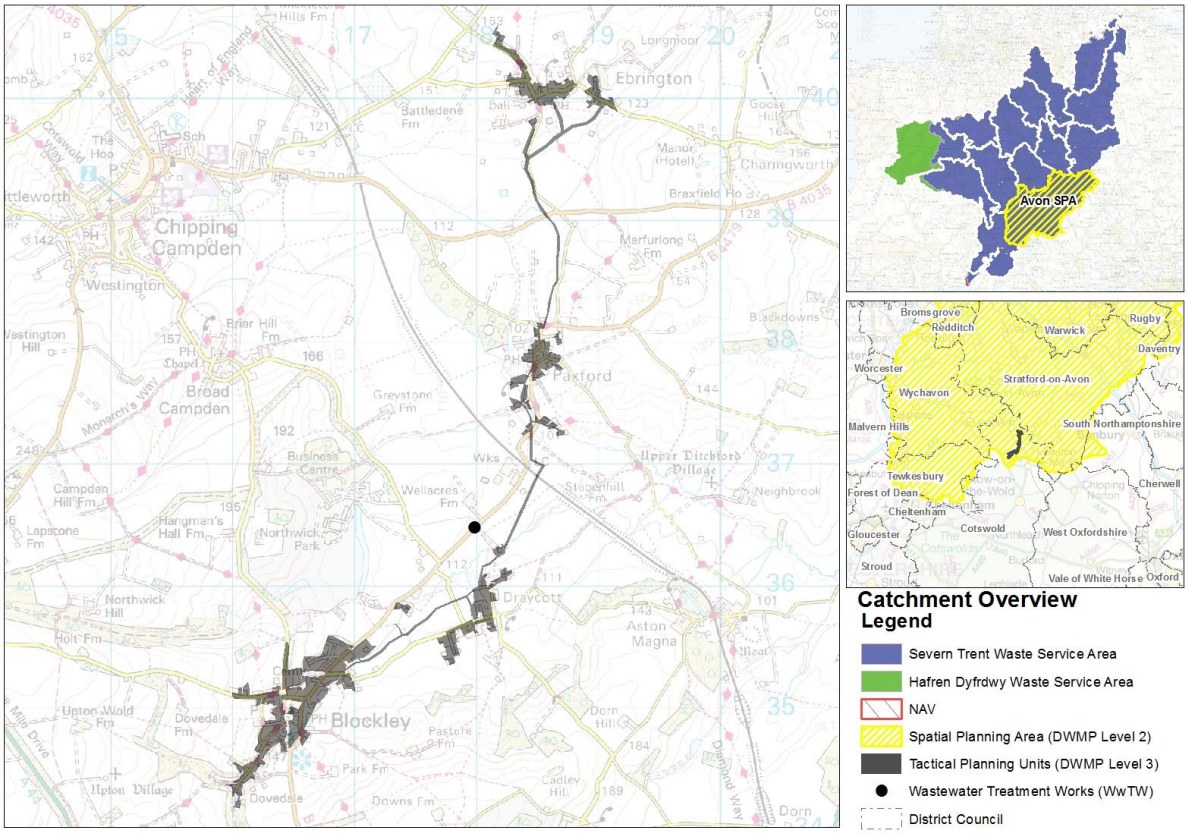
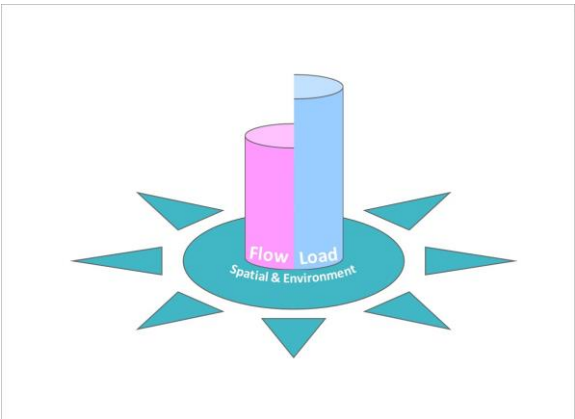


Figure 37 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



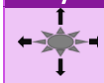
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 38 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 63 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 64 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 65 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 66 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	1	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 67 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	✓
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
BRAUNSTON (10401)

March 2023

WONDERFUL ON TAP

Overview

Braunston WwTW is located to the west of Braunston and serves a residential population of 1,792. Treated effluent is discharged to the River Leam.

Key Statistics:

- Residential Population Served: 1,792
- This is our 268th largest catchment across the whole of Severn Trent, and the 36th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 22.9km of public foul water sewers and 3.5km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

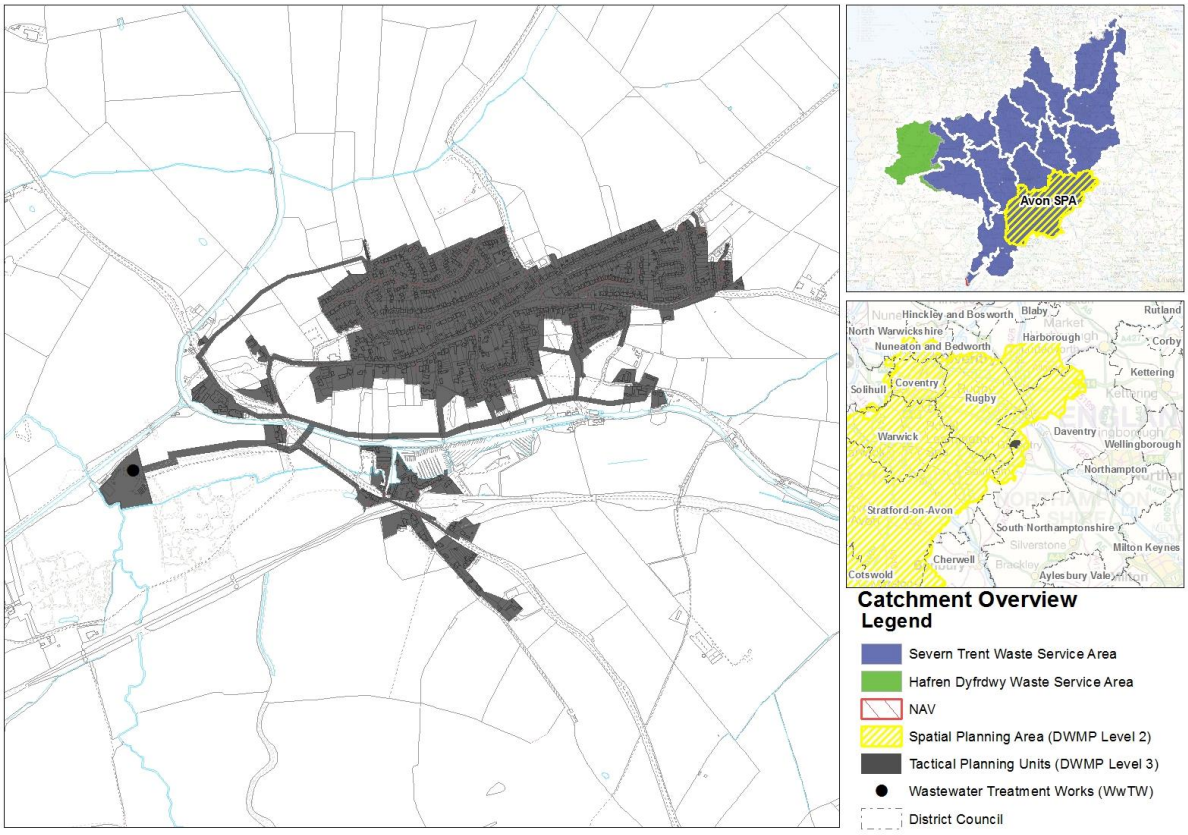
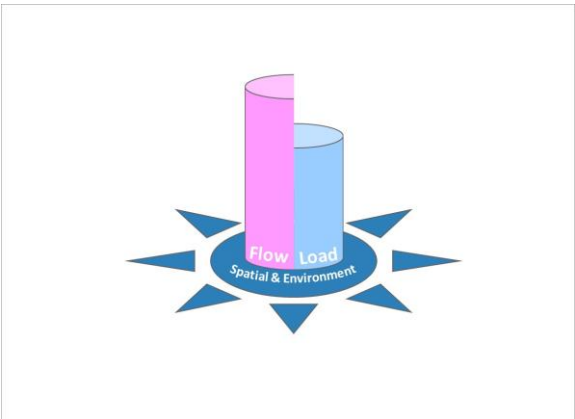


Figure 39 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



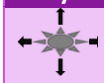
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 40 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 68 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 69 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 70 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 71 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	1	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	1	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 72 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	•
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: BREDON (10028)

March 2023

WONDERFUL ON TAP

Overview

Bredon WwTW is located to the west of Bredon and serves a residential population of 3,596. Treated effluent is discharged to the River Avon. In addition to treating flows from Bredon (gravity) it also drains the villages of Bredon's Hardwick to the south (gravity) and Bredon's Norton to the north (gravity).

Key Statistics:

- Residential Population Served: 3,596
- This is our 199th largest catchment across the whole of Severn Trent, and the 24th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 72.8km of public foul water sewers and 10.8km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

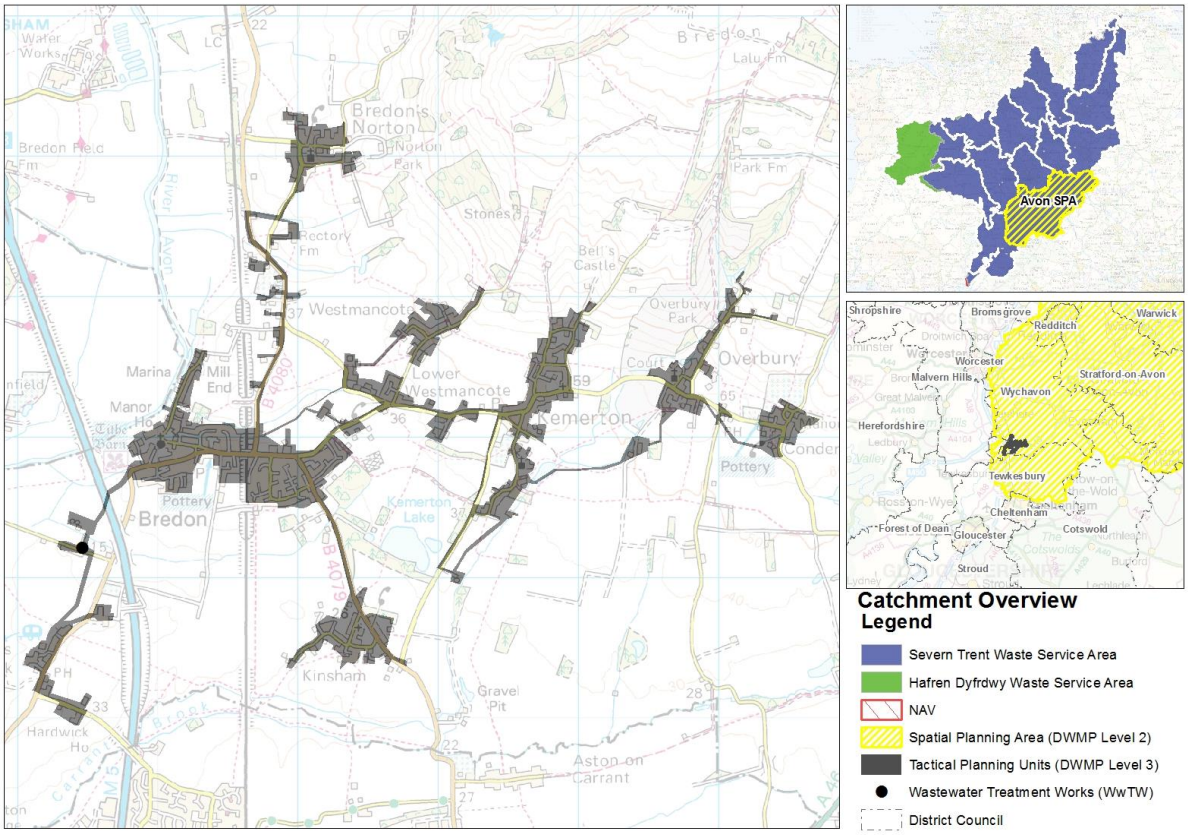
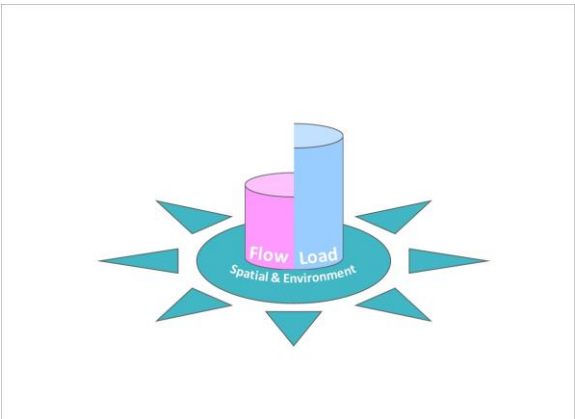


Figure 41 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



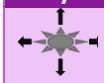
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 42 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 73 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	Yes
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 74 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 75 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 76 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	1	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 77 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	•
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	✓
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: BRETFORD (10428)

March 2023

WONDERFUL ON TAP

Overview

Bretford WwTW serves a residential population of 101. Treated effluent is discharged to the River Avon.

Key Statistics:

- Residential Population Served: 101
- This is our 626th largest catchment across the whole of Severn Trent, and the 124th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 2.7km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

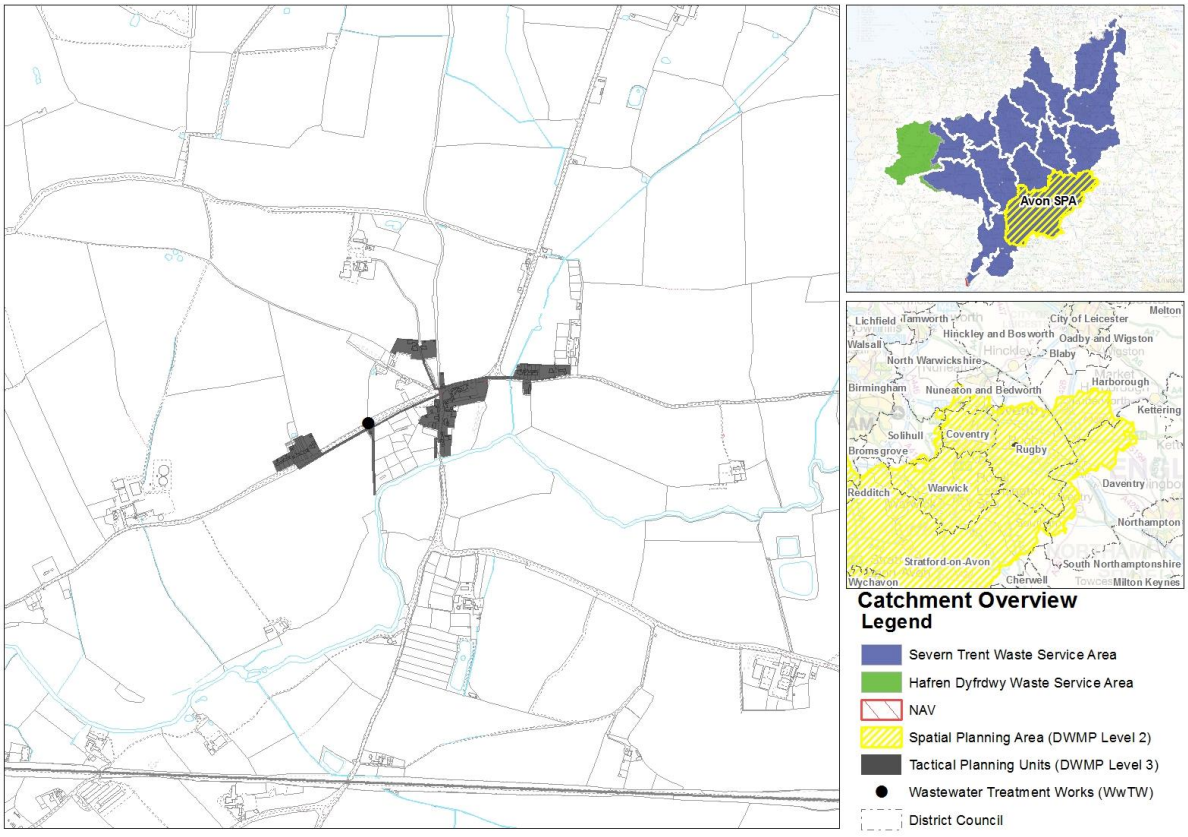
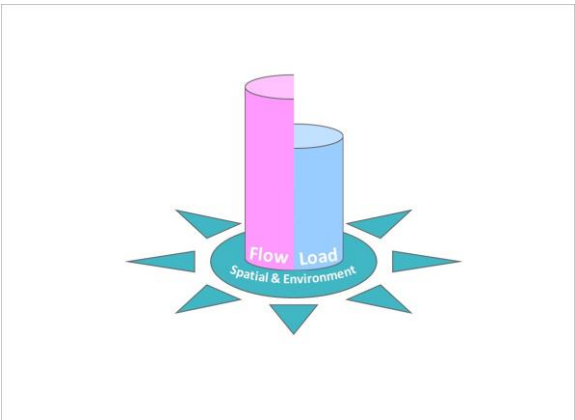


Figure 43 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 44 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 78 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**Yes**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: BRINKLOW (10405)

March 2023

WONDERFUL ON TAP

Overview

Brinklow WwTW is located to the north west of Brinklow and serves a residential population of 1,065. Treated effluent is discharged to the Smite Brook.

Key Statistics:

- Residential Population Served: 1,065
- This is our 321st largest catchment across the whole of Severn Trent, and the 48th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 11.9km of public foul water sewers and 5.0km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

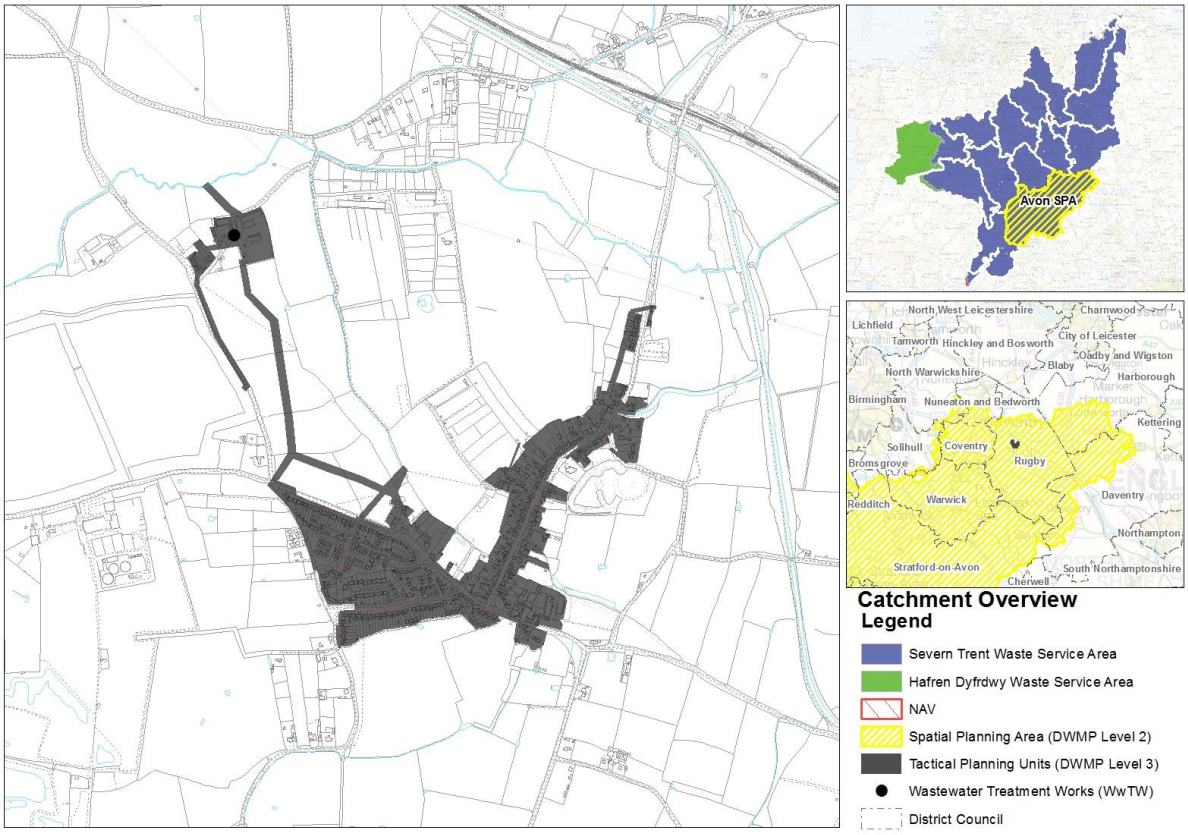
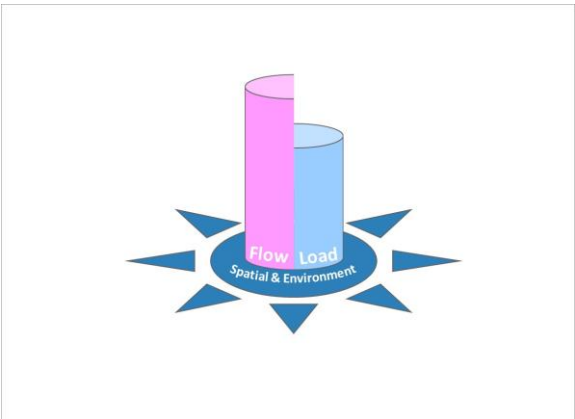


Figure 45 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 46 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 79 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 80 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 81 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 82 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	1	1	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 83 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
BROADWAY (10287)

March 2023

WONDERFUL ON TAP

Overview

Broadway WwTW is located to the west of Broadway and serves a residential population of 3,948. Treated effluent is discharged to a tributary of the Badsey Brook. In addition to treating flows from Broadway (gravity) it also drains the outlying village of Childswickham to the north west (gravity).

Key Statistics:

- Residential Population Served: 3,948
- This is our 188th largest catchment across the whole of Severn Trent, and the 23rd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 56.5km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

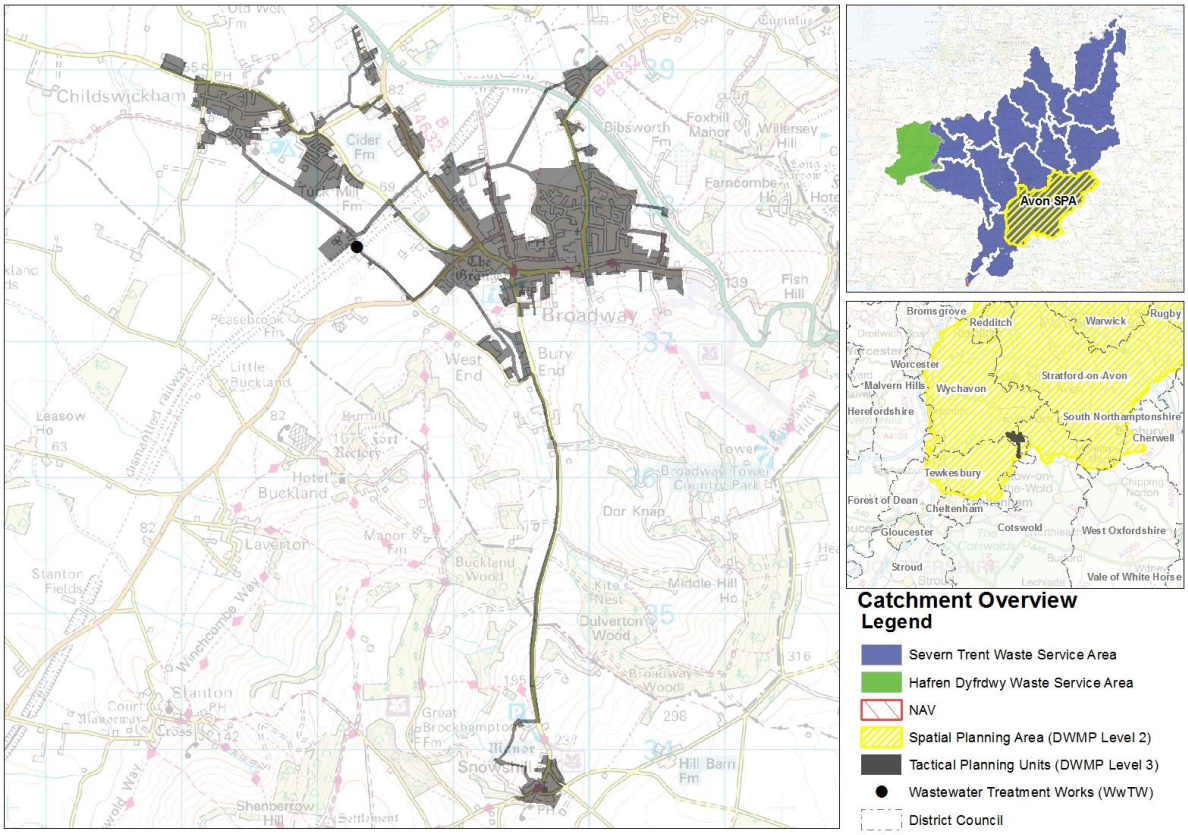
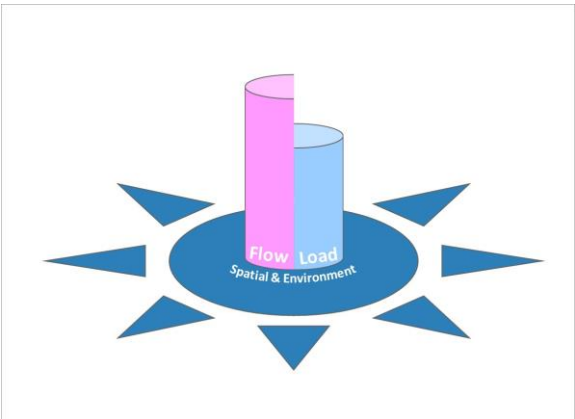


Figure 47 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 48 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 84 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	Yes
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 85 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 86 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 87 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	1	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	1	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 88 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
BROCKHAMPTON (10308)

March 2023

WONDERFUL ON TAP

Overview

Brockhampton WwTW is located to the south west of the town of Bishops Cleeve and serves a residential population of 17,614. Treated effluent is discharged to the Hyde Brook. This treatment works only takes the flows from the village of Bishops Cleeve.

Key Statistics:

- Residential Population Served: 17,614
- This is our 86th largest catchment across the whole of Severn Trent, and the 8th largest in the Avon Stategic Planning Area making up 2% of its population.
- It has 117.3km of public foul water sewers and 37.1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

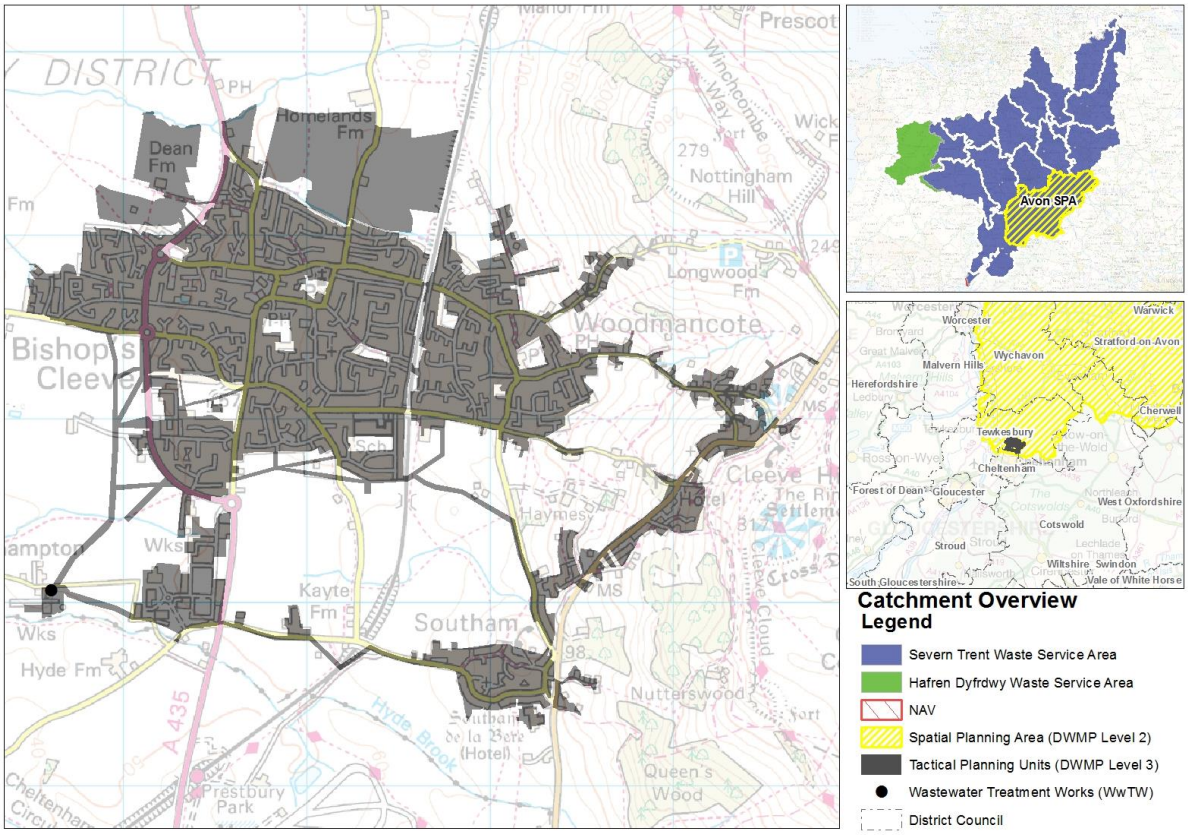
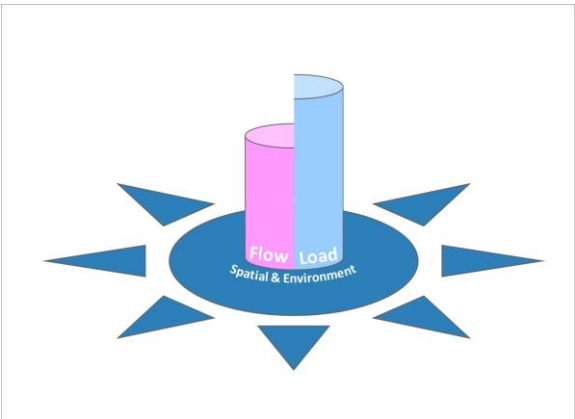


Figure 49 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 50 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 89 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	Yes
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 4 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 90 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 91 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 92 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	1	1	1	1	1	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 93 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	✓✓
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: BROCKHILL (17811)

March 2023

WONDERFUL ON TAP

Overview

Brockhill WwTW serves a residential population of 2. Treated effluent is discharged locally.

Key Statistics:

- Residential Population Served: 2
- This is our 945th largest catchment across the whole of Severn Trent, and the 153rd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has <1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

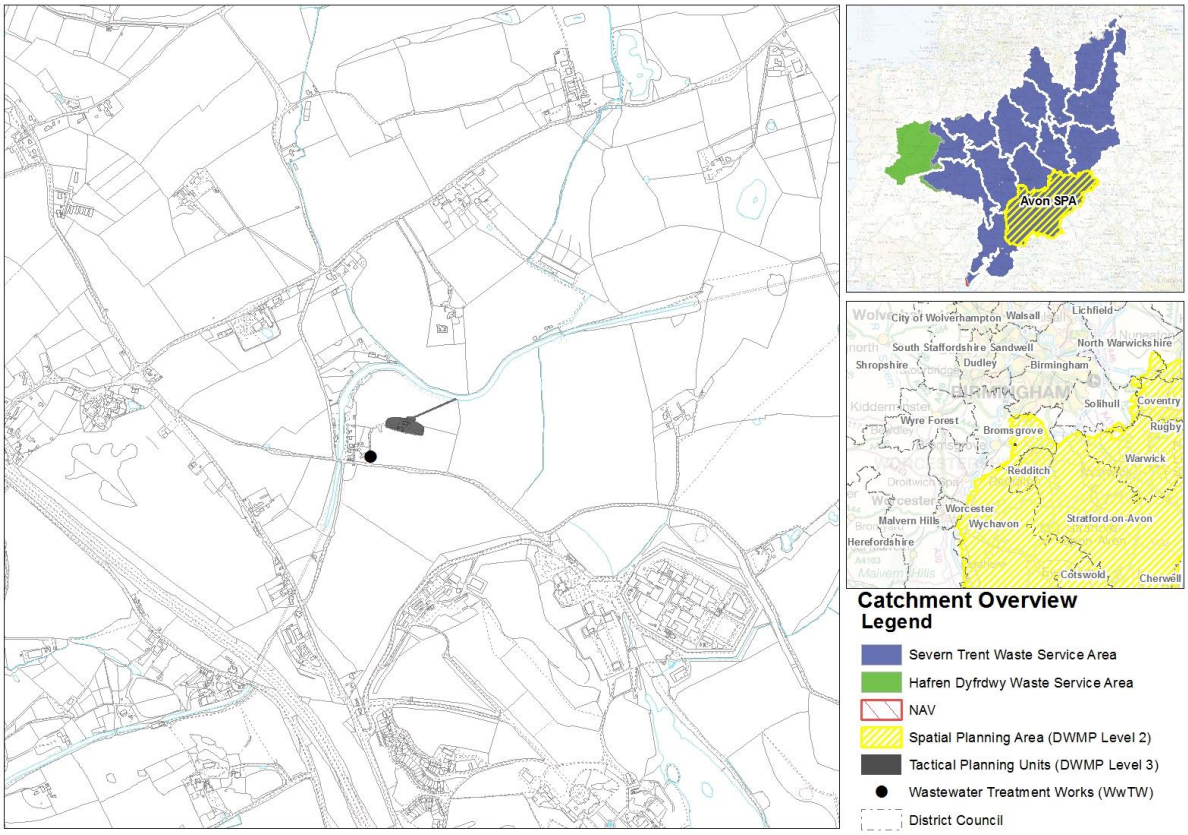
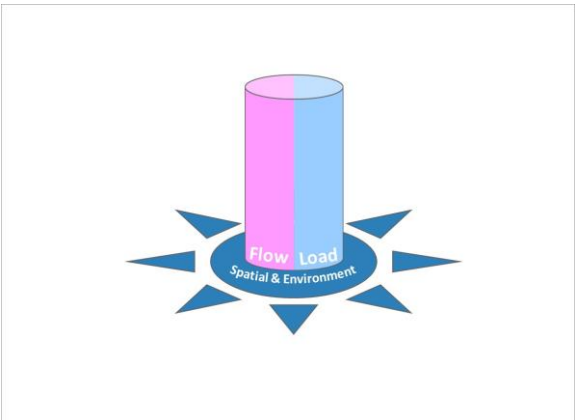


Figure 51 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 52 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 94 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
BROUGHTON HACKET (10068)

March 2023

WONDERFUL ON TAP

Overview

Broughton Hacket WwTW serves a residential population of 158. Treated effluent is discharged to a tributary of the Bow Brook.

Key Statistics:

- Residential Population Served: 158
- This is our 574th largest catchment across the whole of Severn Trent, and the 114th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 1.5km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

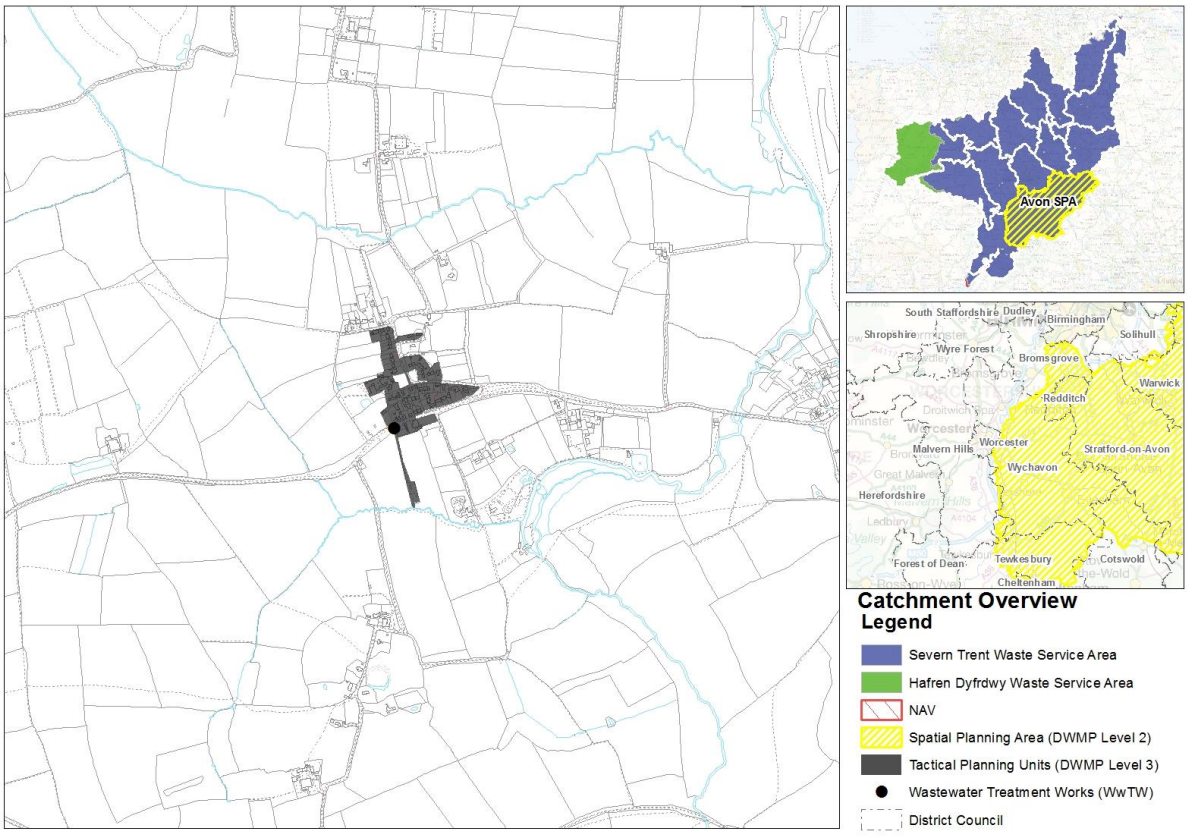
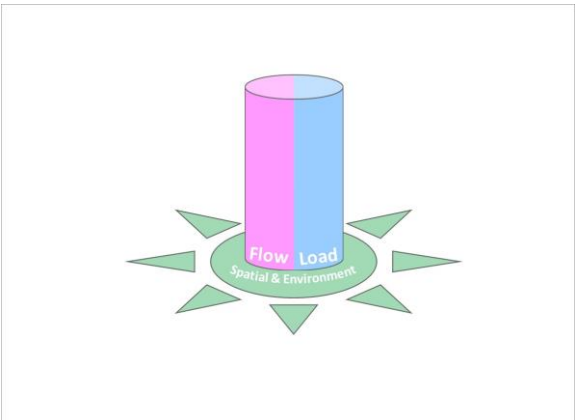


Figure 53 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 54 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 95 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
BUBBENHALL (10427)

March 2023

WONDERFUL ON TAP

Overview

Bubbenhall WwTW is located to the north west of Bubbenhall and serves a residential population of 557. Treated effluent is discharged to the River Avon.

Key Statistics:

- Residential Population Served: 557
- This is our 414th largest catchment across the whole of Severn Trent, and the 76th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 11.1km of public foul water sewers and 1.8km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

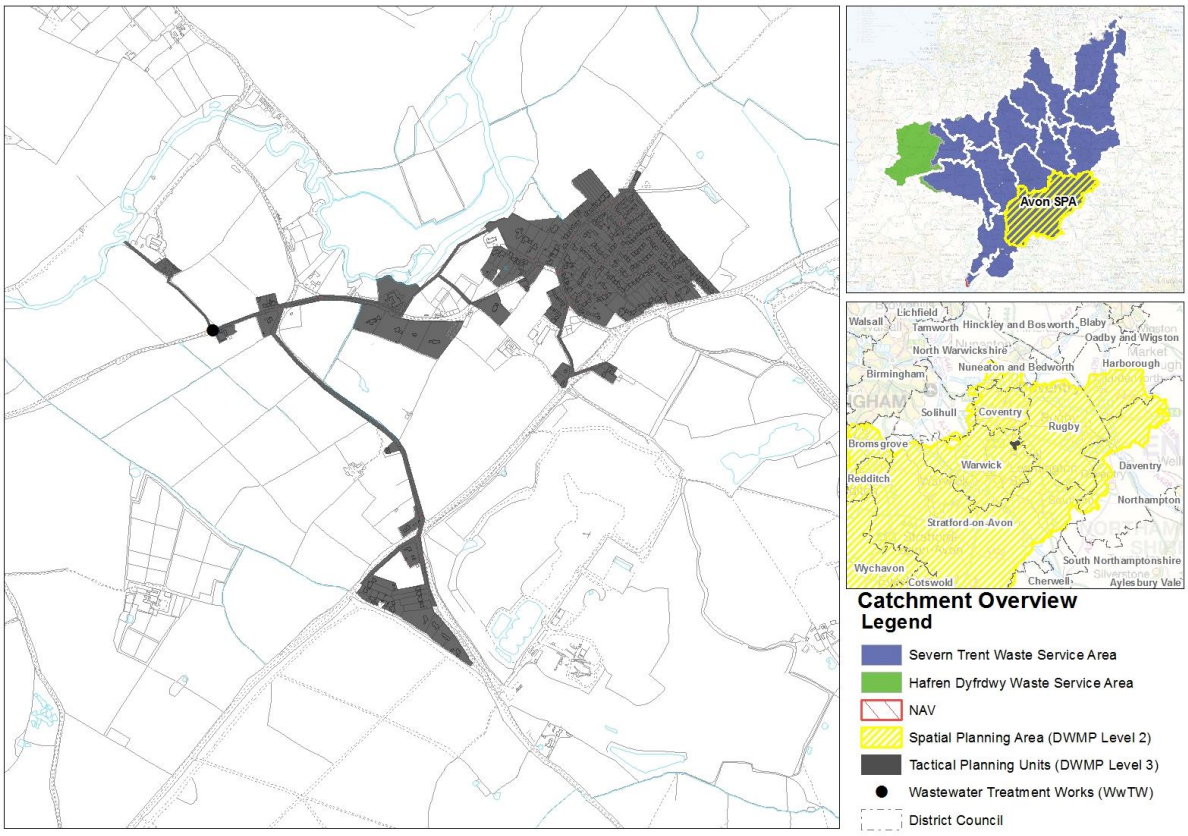
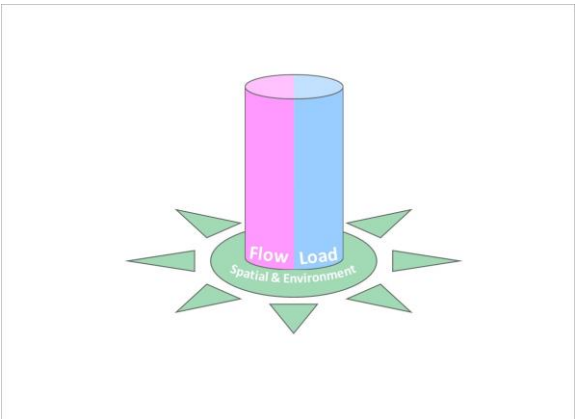


Figure 55 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 56 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 96 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 97 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 98 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 99 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 100 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	•
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
BUTLERS MARSTON (10319)

March 2023

WONDERFUL ON TAP

Overview

Butlers Marston WwTW serves a residential population of 595. Treated effluent is discharged to the River Dene.

Key Statistics:

- Residential Population Served: 595
- This is our 401st largest catchment across the whole of Severn Trent, and the 73rd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 17.3km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

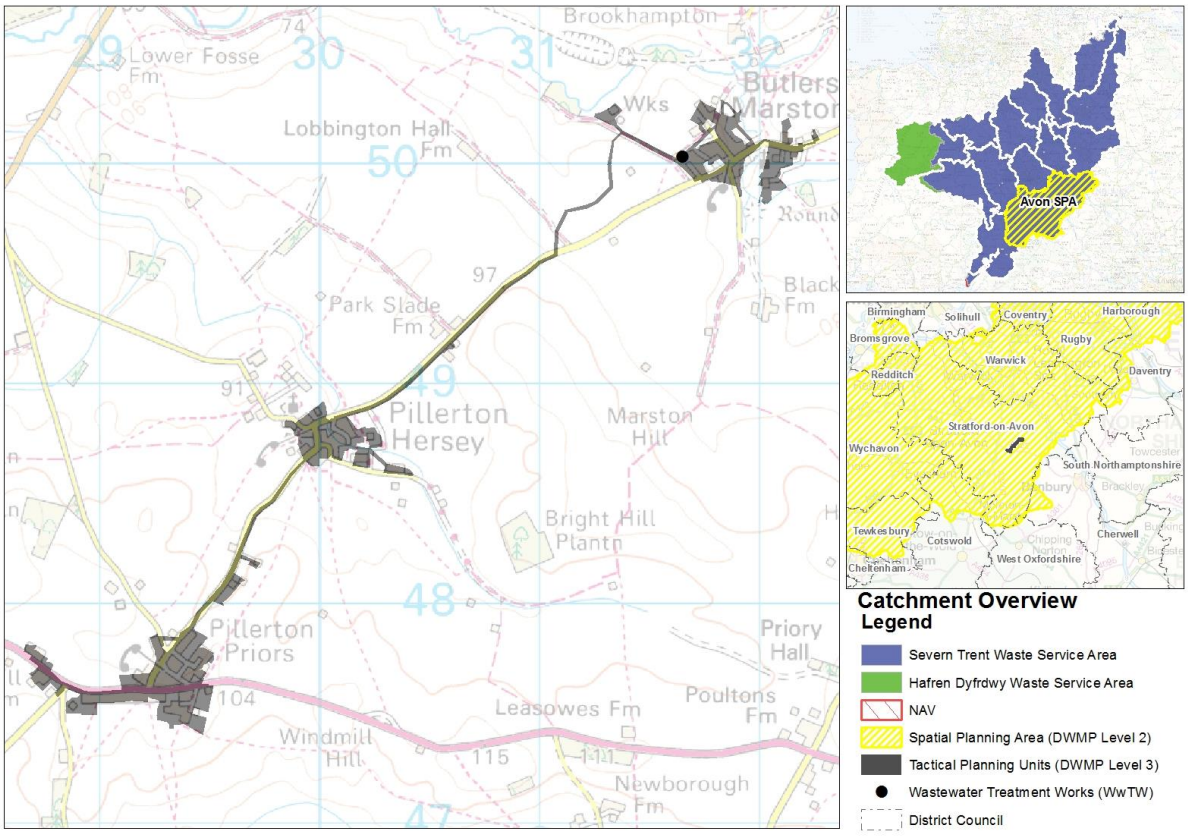
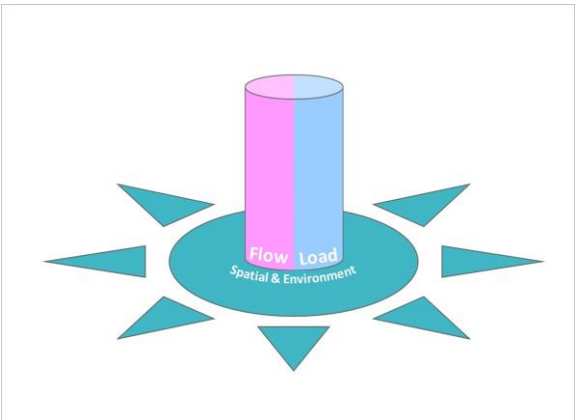


Figure 57 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 58 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 101 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: CHERINGTON (10350)

March 2023

WONDERFUL ON TAP

Overview

Cherington WwTW is located to the south west of Cherrington and serves a residential population of 1,337 (gravity). Treated effluent is discharged to the River Stour. In addition to treating flows from Cherrington (gravity) it also drains the outlying village of Lower Brailles in the north (gravity).

Key Statistics:

- Residential Population Served: 1,337
- This is our 296th largest catchment across the whole of Severn Trent, and the 40th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 26.8km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

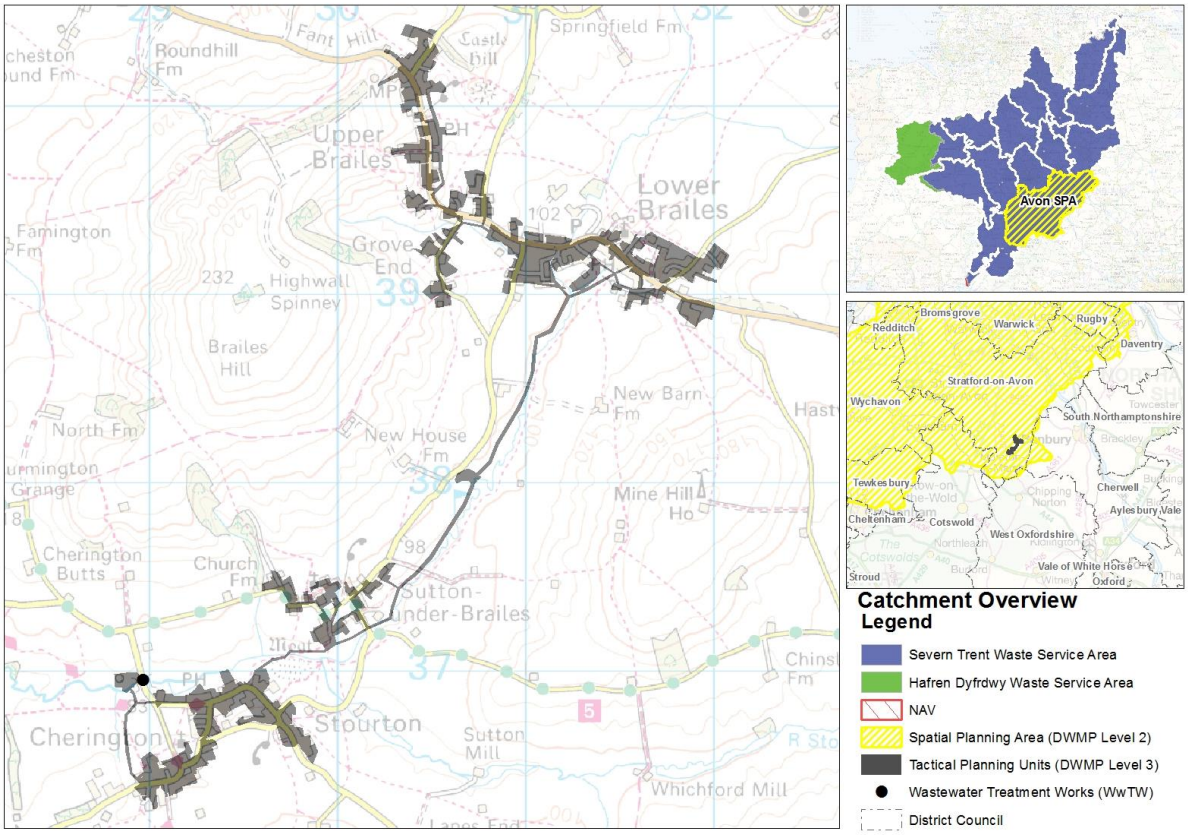
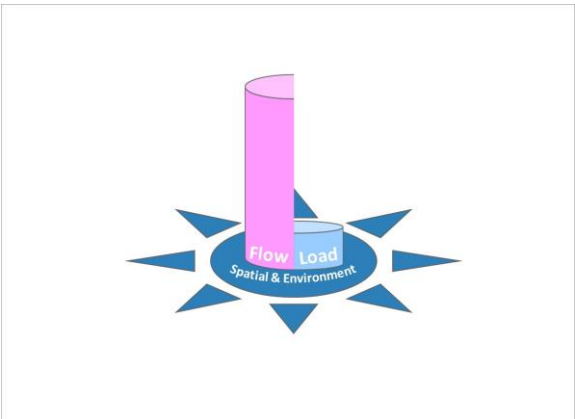


Figure 59 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 60 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 102 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	Yes
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 4 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 103 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 104 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 105 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	1	1	1	1	1	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	2	2	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 106 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
CHIPPING CAMPDEN (10330)

March 2023

WONDERFUL ON TAP

Overview

Chipping Campden WwTW is located to the east of Chipping Campden and serves a population of 2,320. Treated effluent is discharged to the Cam Brook, a tributary of the River Stour. In addition to treating flows from Chipping Campden, the catchment also drains the village of Broad Campden. All flows are by gravity.

Key Statistics:

- Residential Population Served: 2,320
- This is our 237th largest catchment across the whole of Severn Trent, and the 31st largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 39.5km of public foul water sewers and 4.8km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

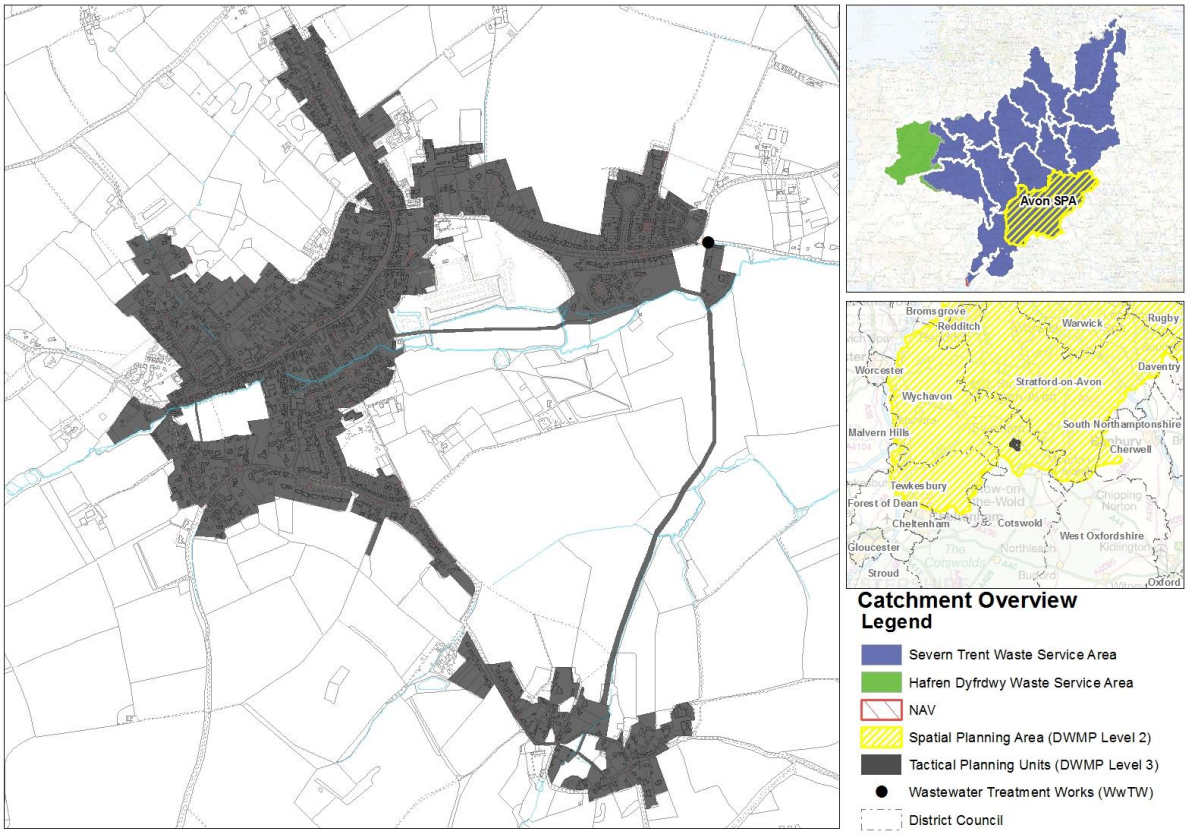
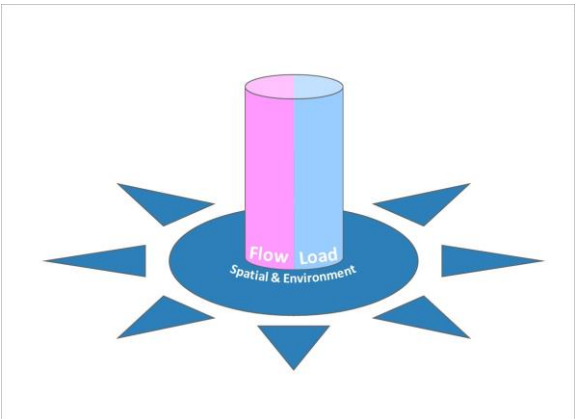


Figure 61 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 62 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 107 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 108 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 109 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 110 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 111 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	✓
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	•
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
CHURCH LAWFORD (10382)

March 2023

WONDERFUL ON TAP

Overview

Church Lawford WwTW is located to the north of Church Lawford and serves a residential population of 330. Treated effluent is discharged to the River Avon.

Key Statistics:

- Residential Population Served: 330
- This is our 473rd largest catchment across the whole of Severn Trent, and the 95th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 4.6km of public foul water sewers and 2.5km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

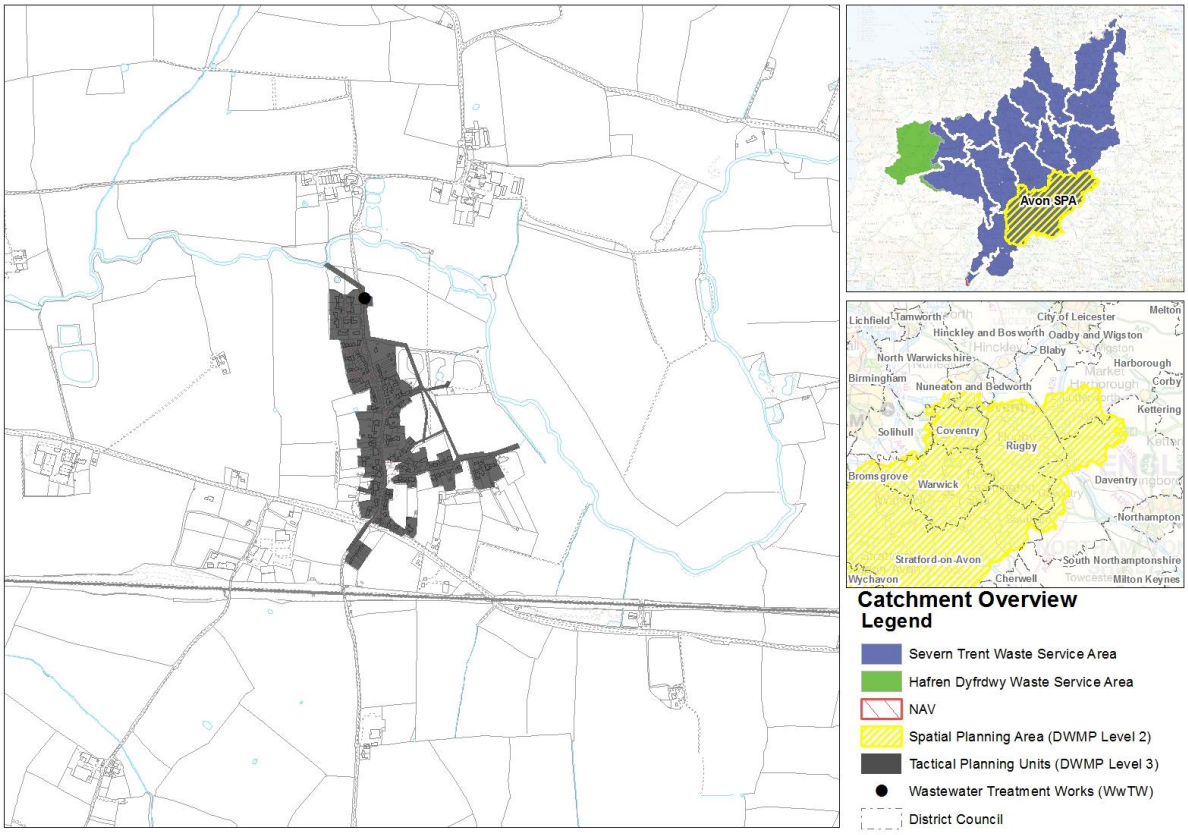
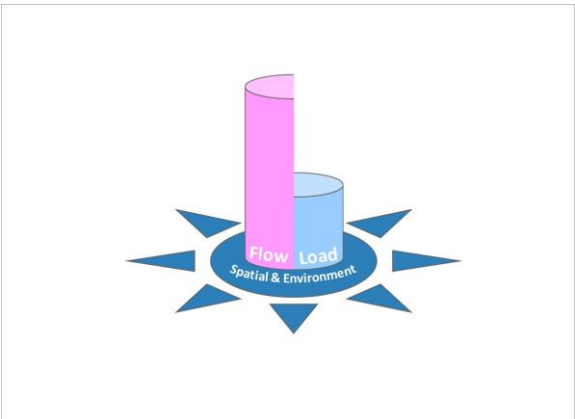


Figure 63 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 64 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 112 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 113 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 114 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 115 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	1	1	2	2	2	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	N/A	N/A	N/A	N/A	N/A	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 116 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
CHURCH LENCH (10156)

March 2023

WONDERFUL ON TAP

Overview

Church Lench WwTW is located to the north east of Church Lench and serves a residential population of 428. Treated effluent is discharged to a tributary of the Whitsun Brook. In addition to treating flows from Church Lench (gravity), the catchment also drains the outlying hamlet of Atch Lench to the south west (gravity).

Key Statistics:

- Residential Population Served: 428
- This is our 446th largest catchment across the whole of Severn Trent, and the 83rd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 10.1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

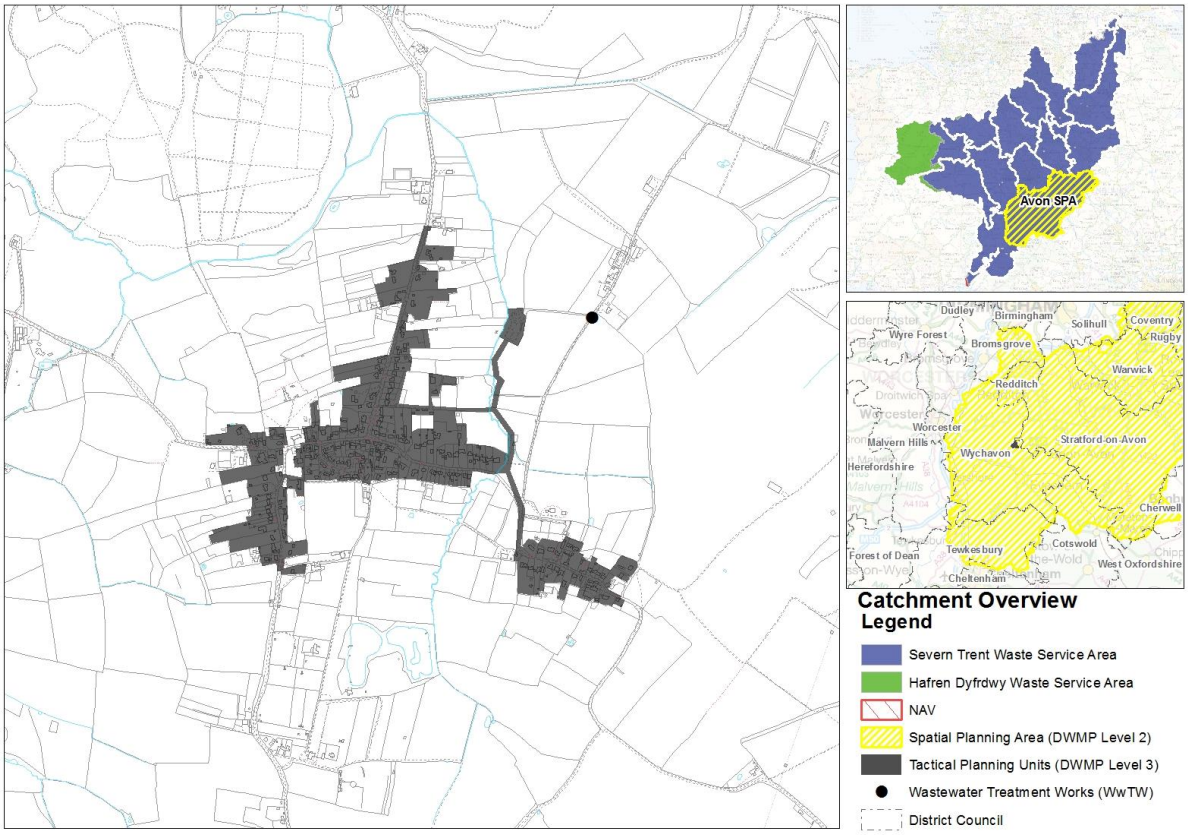
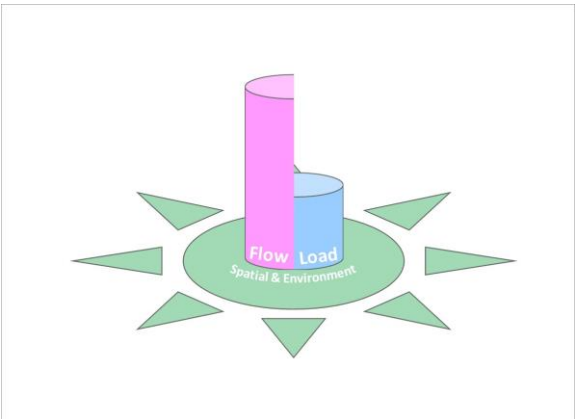


Figure 65 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



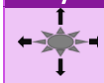
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 66 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 117 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 118 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 119 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 120 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 121 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
CHURCHOVER (COTON ROAD) (10423)

March 2023

WONDERFUL ON TAP

Overview

Churchover (Coton Road) WwTW serves a residential population of 35. Treated effluent is discharged to the River Swift Oxford Canal feeder.

Key Statistics:

- Residential Population Served: 35
- This is our 759th largest catchment across the whole of Severn Trent, and the 144th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has <1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

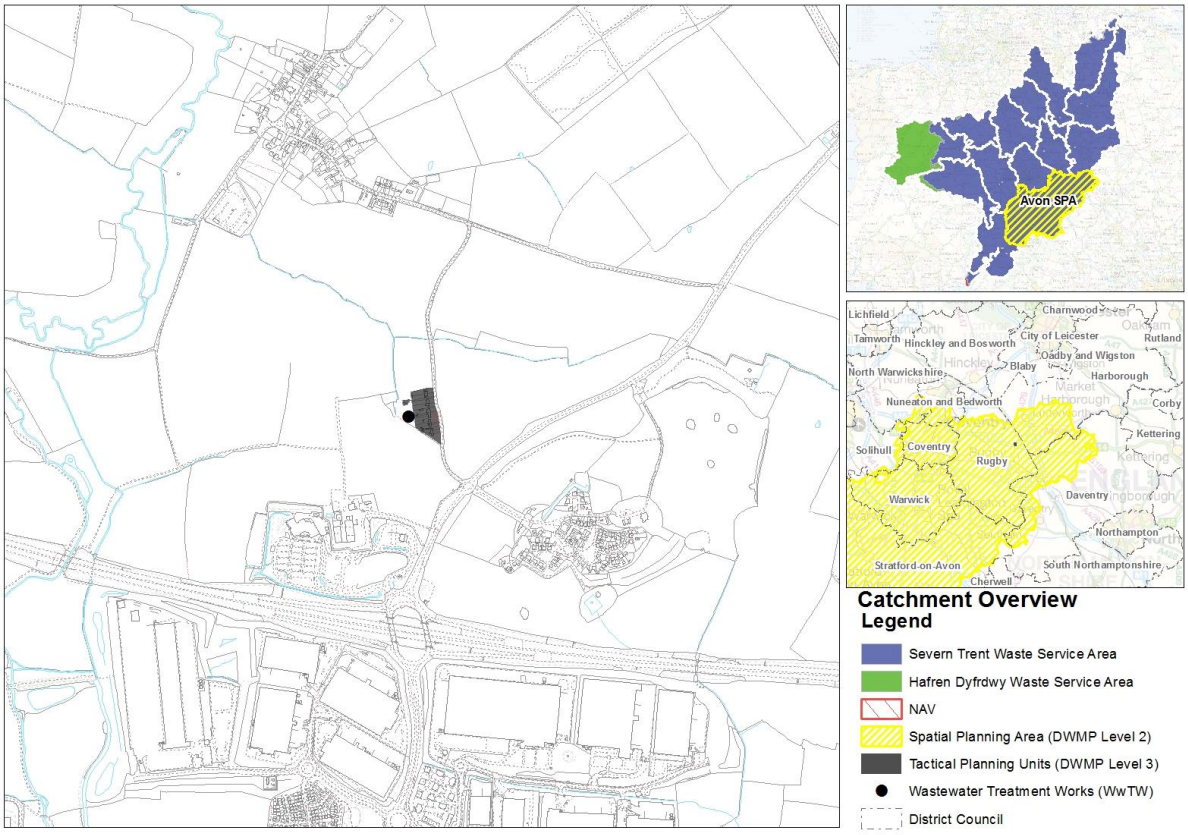
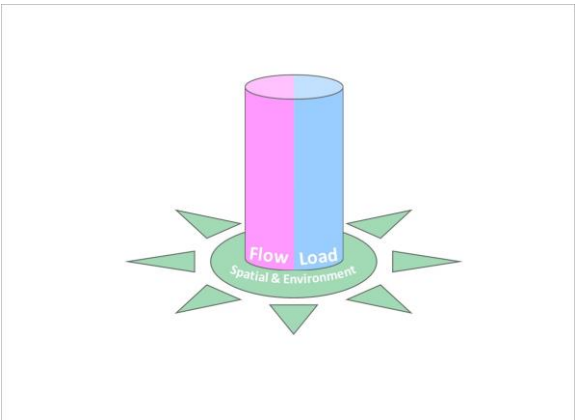


Figure 67 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 68 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 122 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
CHURCHOVER (10383)

March 2023

WONDERFUL ON TAP

Overview

Churchover WwTW is located to the south west of Churchover and serves a residential population of 204. Treated effluent is discharged to the River Swift.

Key Statistics:

- Residential Population Served: 204
- This is our 547th largest catchment across the whole of Severn Trent, and the 109th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 2.7km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

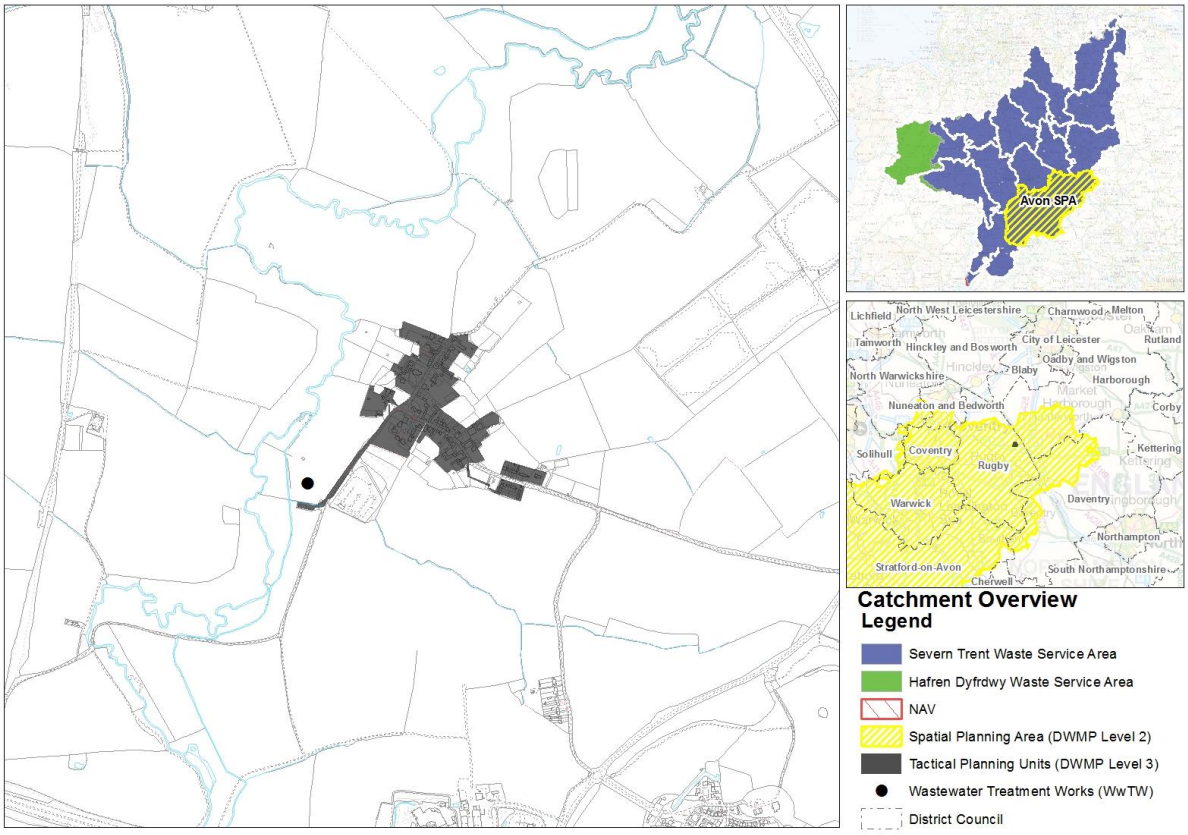
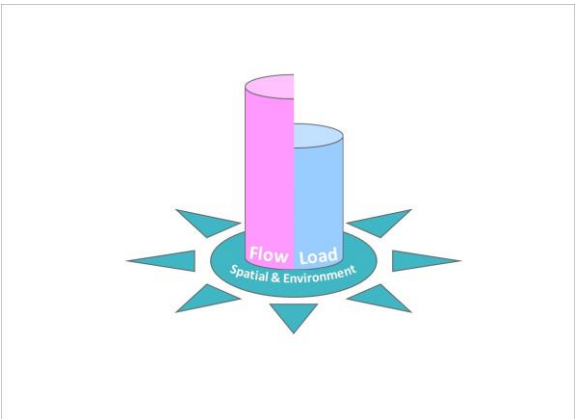


Figure 69 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



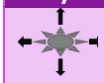
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 70 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 123 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 124 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 125 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 126 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 127 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓✓✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	•
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	•
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	•
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
CLAVERDON (10349)

March 2023

WONDERFUL ON TAP

Overview

Claverdon WwTW is located to the south east of Claverdon and serves a residential population of 818. Treated effluent is discharged to a tributary of the Claverdon Brook.

Key Statistics:

- Residential Population Served: 818
- This is our 351st largest catchment across the whole of Severn Trent, and the 59th largest in the Avon Strategic Planning Area making up <1% of its population.
- It has 20.8km of public foul water sewers and 4.4km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

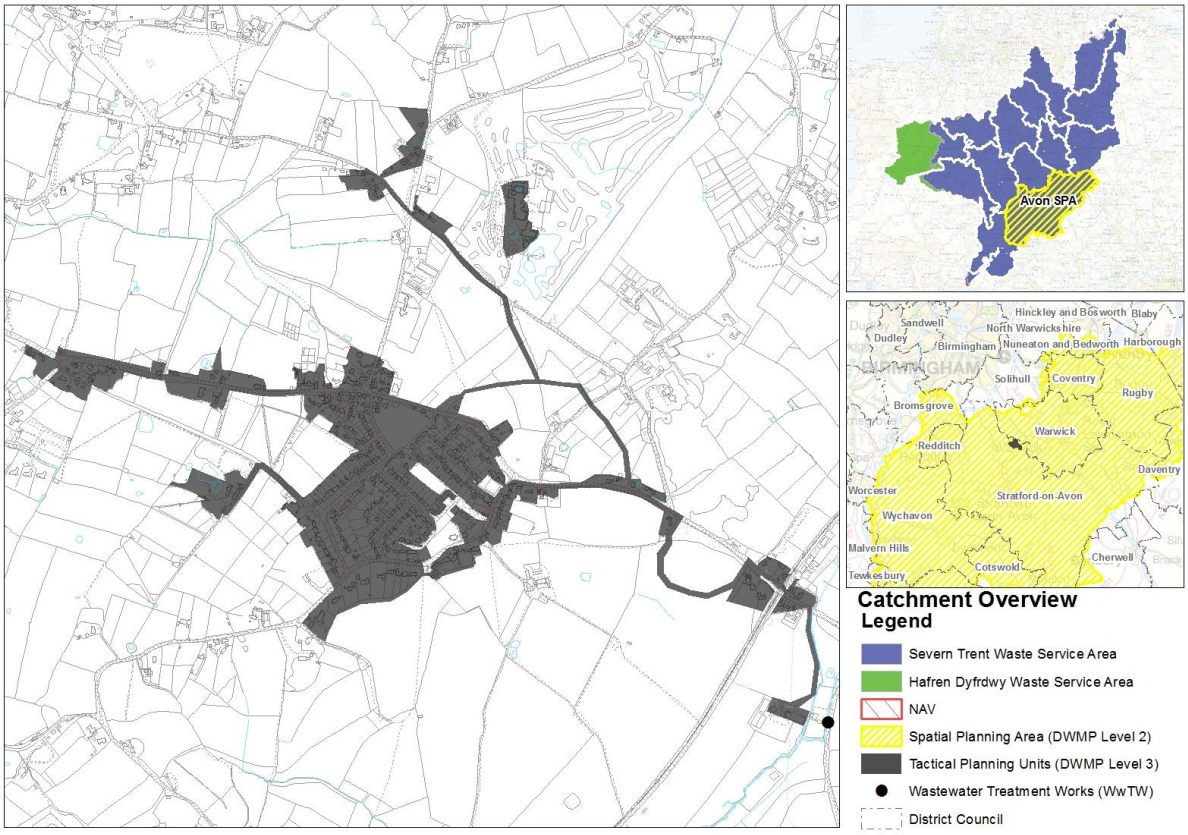
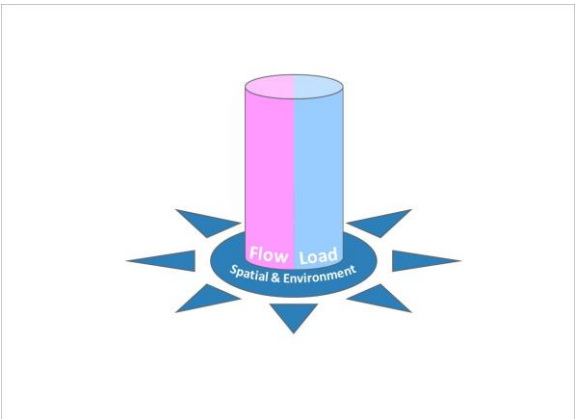


Figure 71 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 72 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 128 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	Yes
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 129 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 130 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 131 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 132 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	✓
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: COMBROOK (10335)

March 2023

WONDERFUL ON TAP

Overview

Combrook WwTW serves a residential population of 158. Treated effluent is discharged to a tributary of the River Dene.

Key Statistics:

- Residential Population Served: 158
- This is our 574th largest catchment across the whole of Severn Trent, and the 114th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 2.8km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

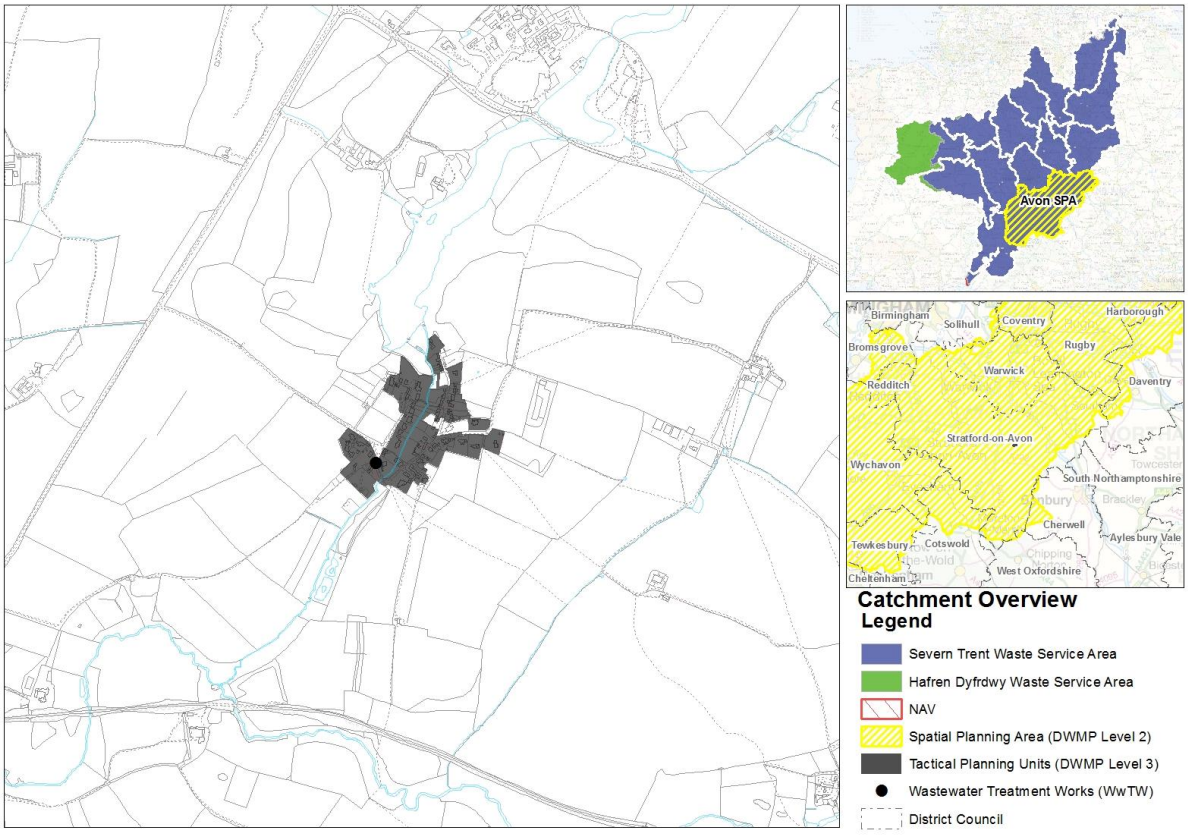
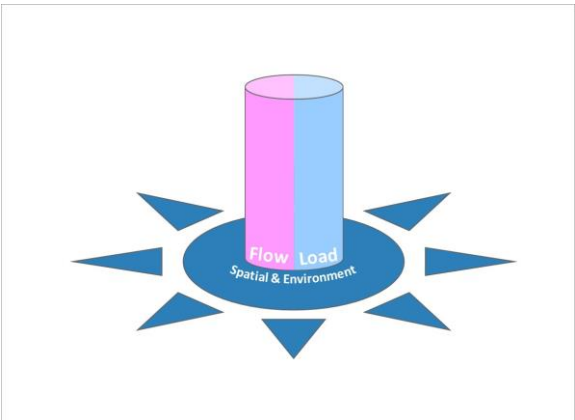


Figure 73 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 74 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 133 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: CORLEY (10461)

March 2023

WONDERFUL ON TAP

Overview

Corley WwTW serves a residential population of 983. Treated effluent is discharged to the Breach Brook.

Key Statistics:

- Residential Population Served: 983
- This is our 331st largest catchment across the whole of Severn Trent, and the 51st largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 34.2km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

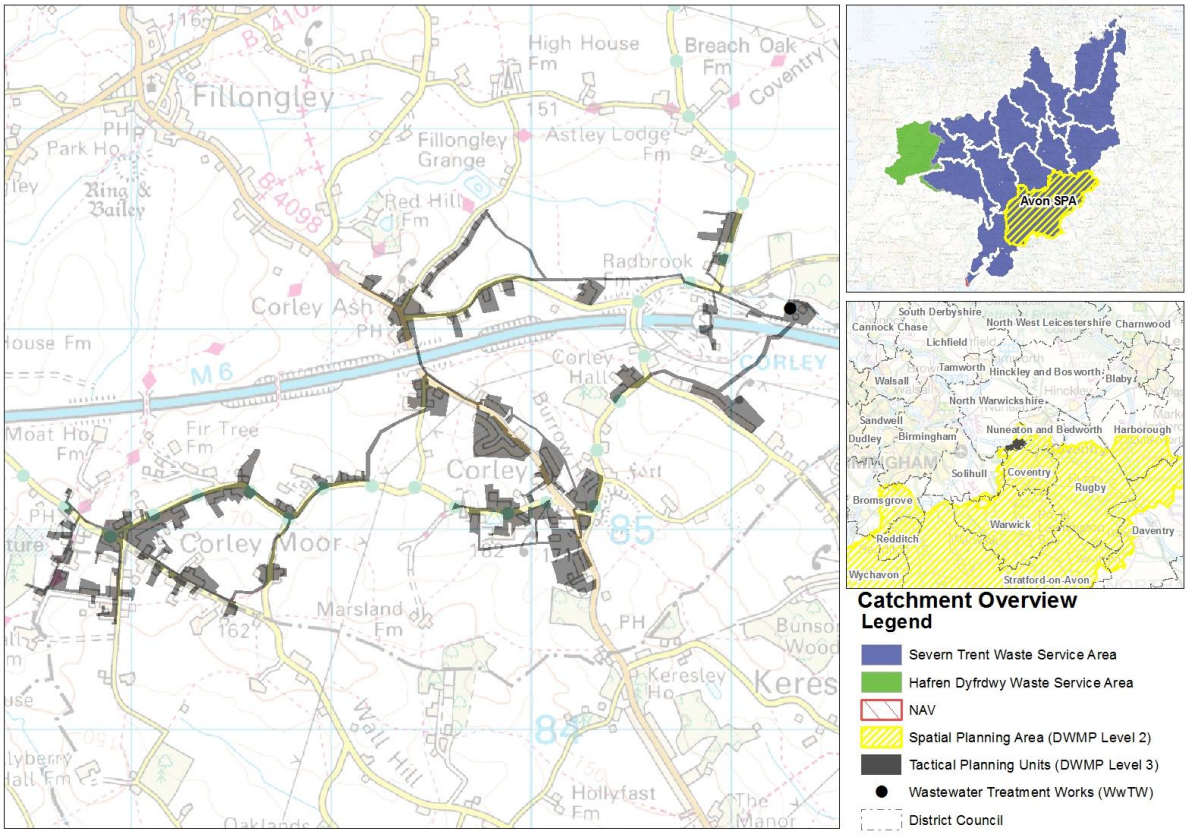
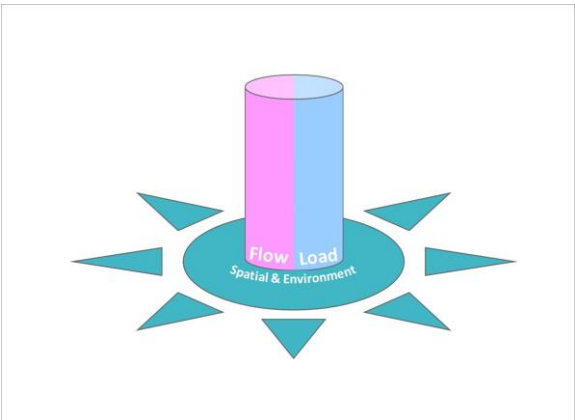


Figure 75 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 76 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 134 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

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Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
CROPTHORNE HEATH (10030)

March 2023

WONDERFUL ON TAP

Overview

Cropthorne Heath WwTW is located to the south west of Kempsey and serves a residential population of 2,739. Treated effluent is discharged to the River Avon. In addition to treating flows from Cropthorne (gravity) it also drains the outlying villages of Charlton to the north west (gravity) and Fladbury to the north (gravity).

Key Statistics:

- Residential Population Served: 2,739
- This is our 220th largest catchment across the whole of Severn Trent, and the 26th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 59.9km of public foul water sewers and 1.2km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

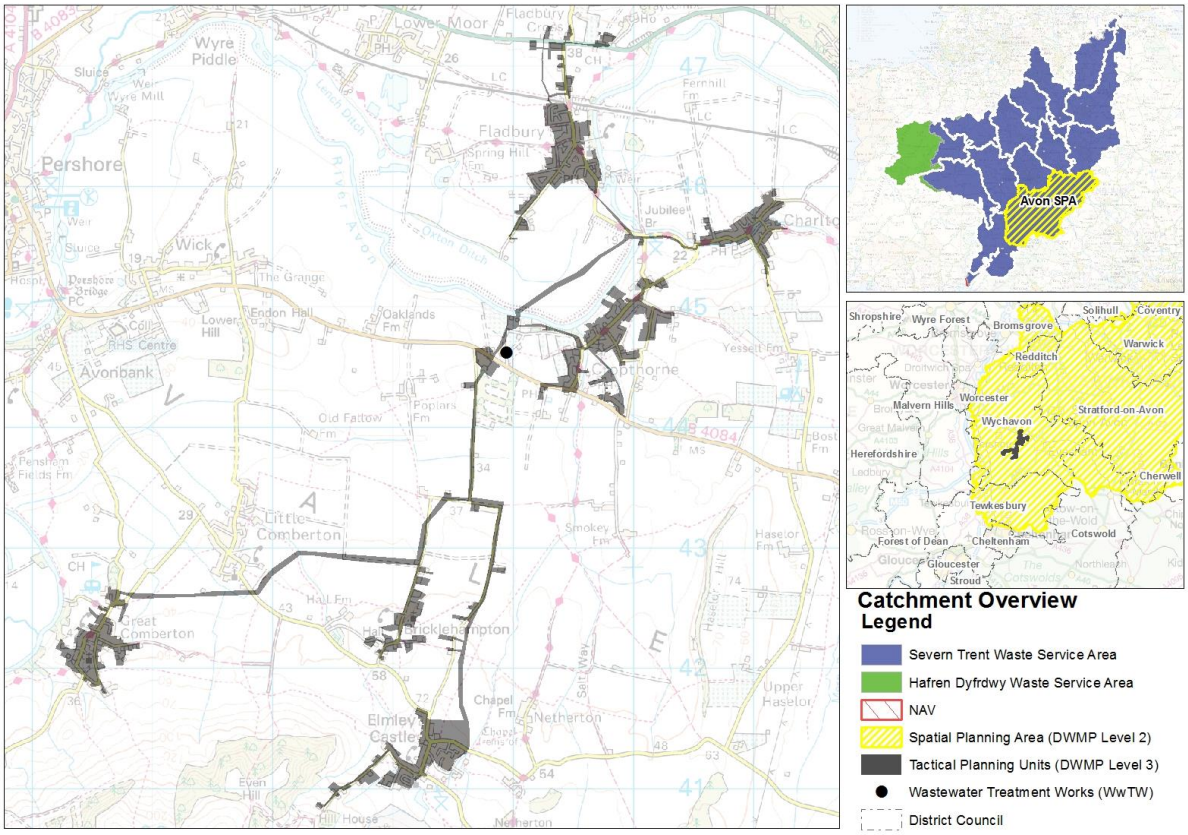
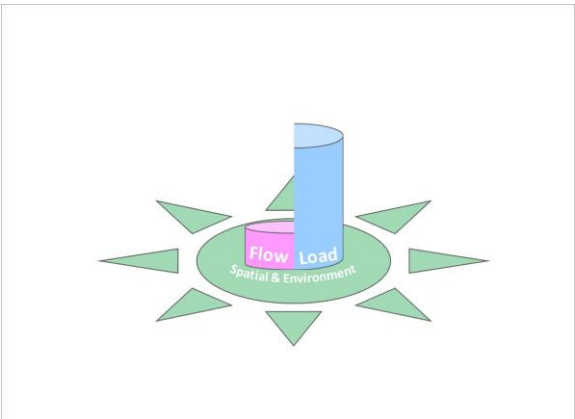


Figure 77 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 78 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 135 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 136 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 137 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 138 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	2	2	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	1	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 139 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
CROWLE (WORCESTER) (10097)

March 2023

WONDERFUL ON TAP

Overview

Crowle (Worcester) WwTW is located to the east of Crowle and serves a residential population of 982. Treated effluent is discharged locally.

Key Statistics:

- Residential Population Served: 982
- This is our 332nd largest catchment across the whole of Severn Trent, and the 52nd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 11.3km of public foul water sewers and 1.2km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

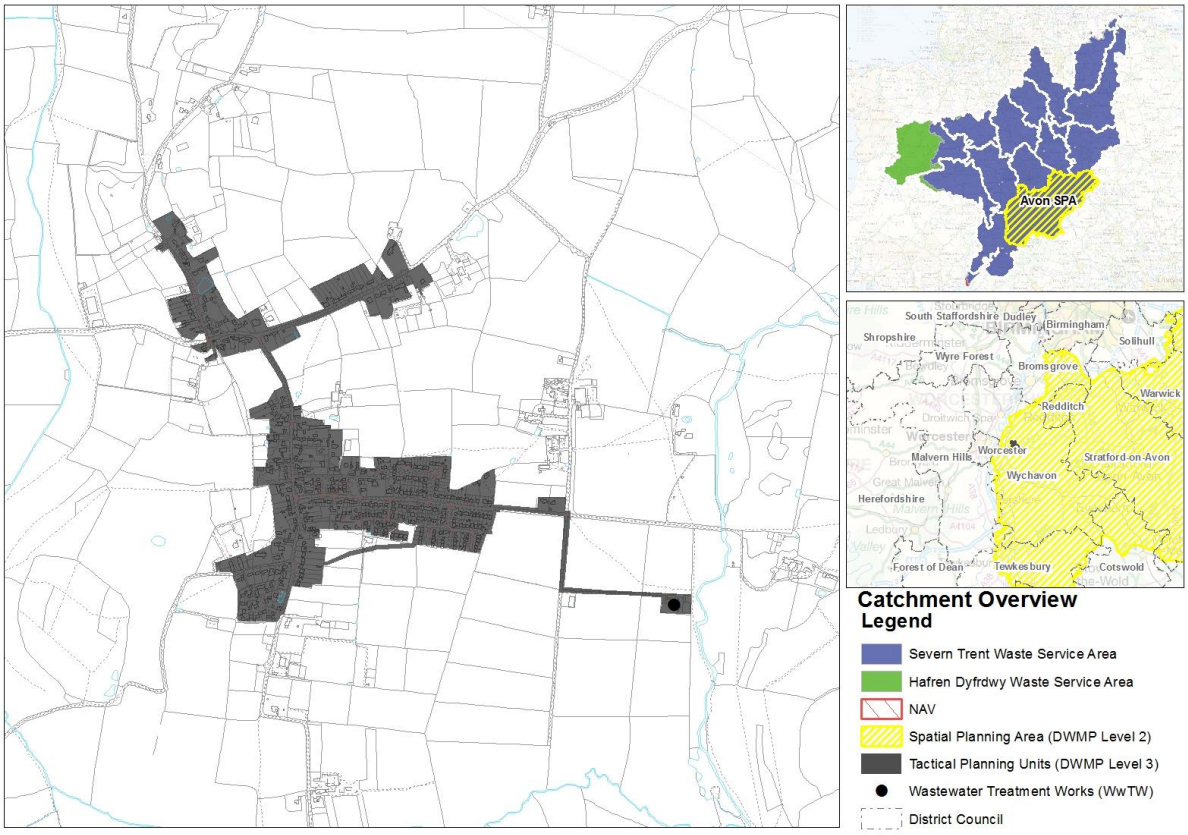


Figure 79 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".

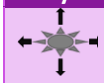
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 80 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 140 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 141 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 142 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 143 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	1	1	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 144 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
DEFFORD LODGE HILL (10056)

March 2023

WONDERFUL ON TAP

Overview

Defford Lodge Hill WwTW serves a residential population of 44. Treated effluent is discharged to a tributary of the Bow Brook.

Key Statistics:

- Residential Population Served: 44
- This is our 731st largest catchment across the whole of Severn Trent, and the 141st largest in the Avon Stategic Planning Area making up <1% of its population.
- It has <1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

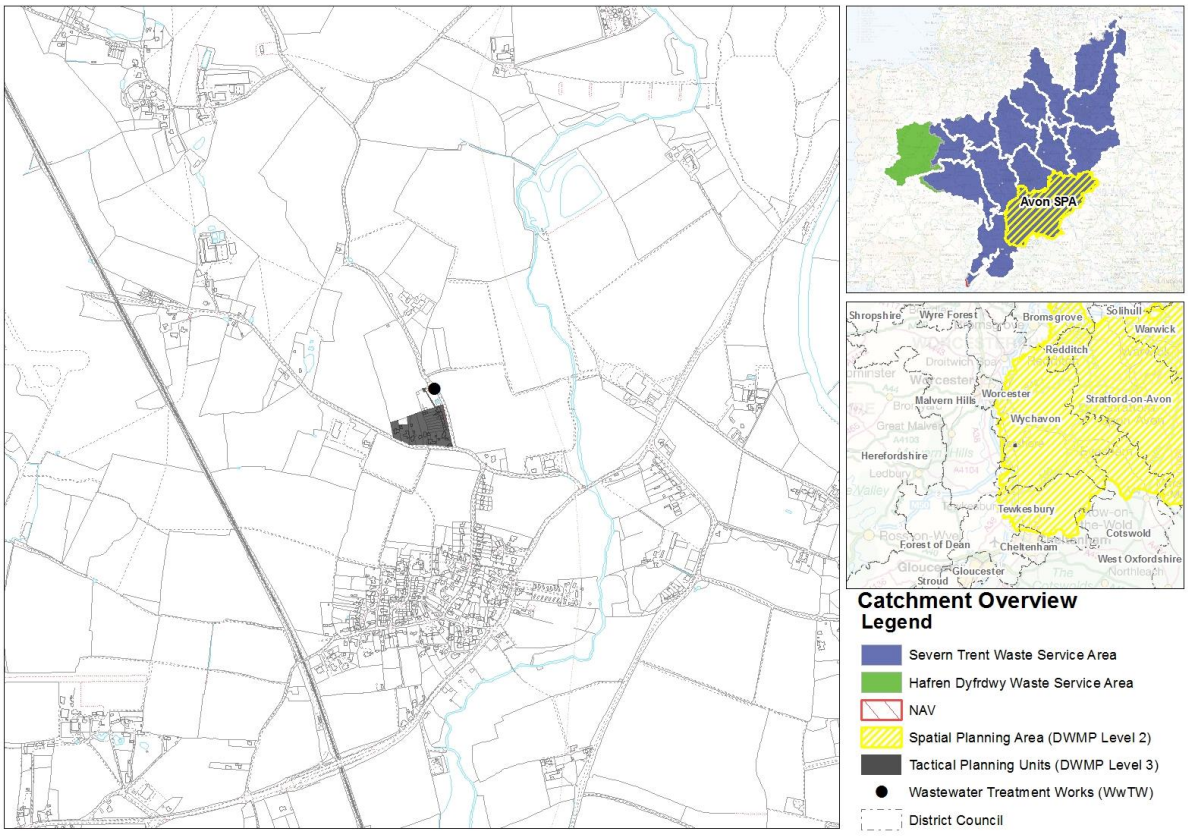
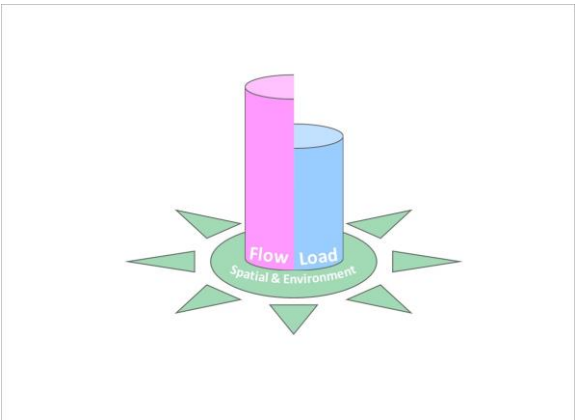


Figure 81 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 82 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 145 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
DEFFORD VILLAGE (10032)

March 2023

WONDERFUL ON TAP

Overview

Defford Village WwTW is located to the south of Defford and serves a residential population of 395. Treated effluent is discharged to the Bow Brook.

Key Statistics:

- Residential Population Served: 395
- This is our 450th largest catchment across the whole of Severn Trent, and the 85th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 5.1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

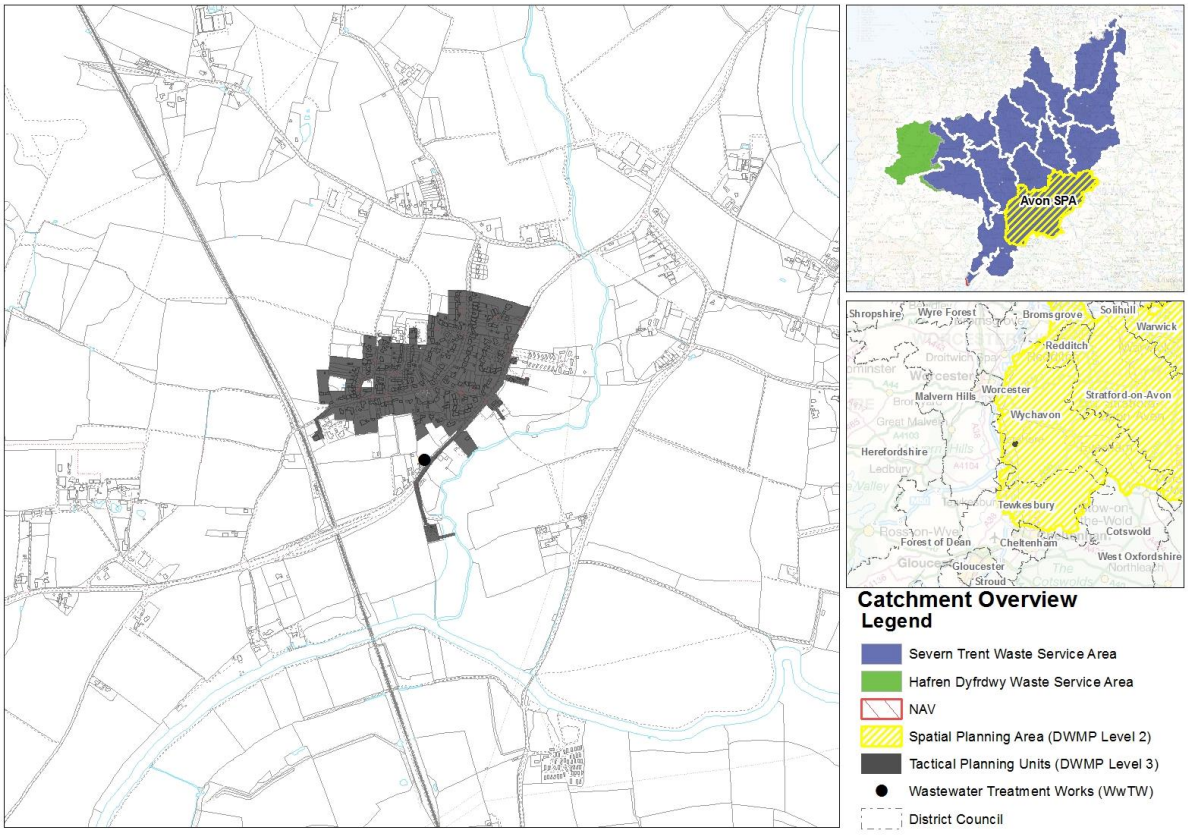
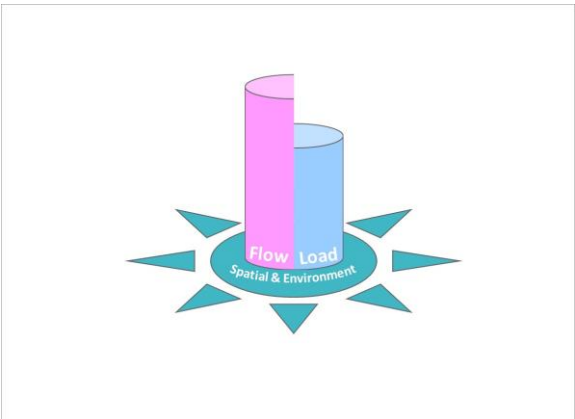


Figure 83 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 84 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 146 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 147 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 148 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 149 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 150 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	◆
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	◆
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	◆
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	◆
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	◆
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓✓✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	◆
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	◆
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	◆
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	◆
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	◆
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	◆
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	◆
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	◆
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	◆
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	◆
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	◆
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	◆
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	◆
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	◆

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: DORSINGTON (10320)

March 2023

WONDERFUL ON TAP

Overview

Dorsington WwTW serves a residential population of 62. Treated effluent is discharged to the Noleham Brook.

Key Statistics:

- Residential Population Served: 62
- This is our 694th largest catchment across the whole of Severn Trent, and the 137th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 1.3km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

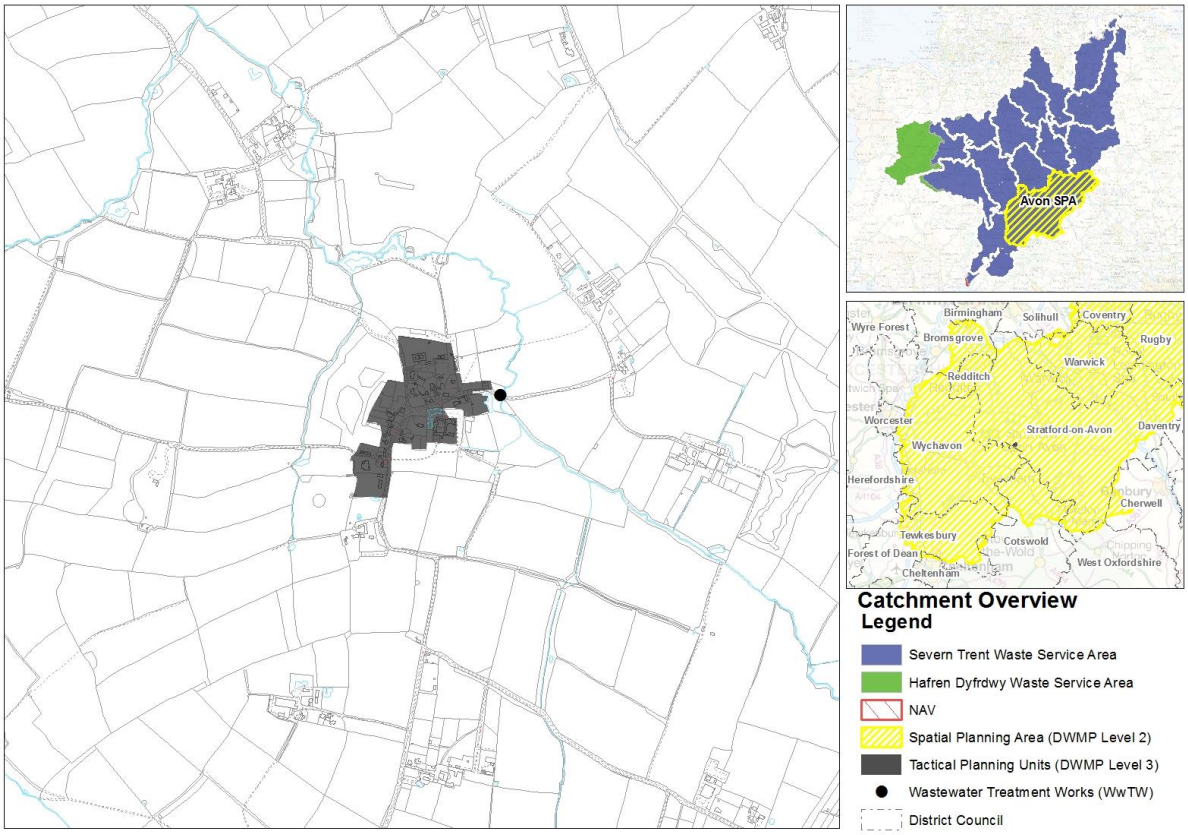
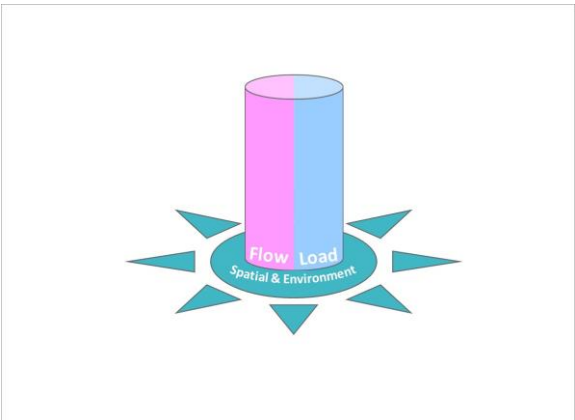


Figure 85 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 86 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 151 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: DUMBLETON (10280)

March 2023

WONDERFUL ON TAP

Overview

Dumbleton WwTW serves a residential population of 291. Treated effluent is discharged to a tributary of the Carrant Brook.

Key Statistics:

- Residential Population Served: 291
- This is our 488th largest catchment across the whole of Severn Trent, and the 98th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 6.1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

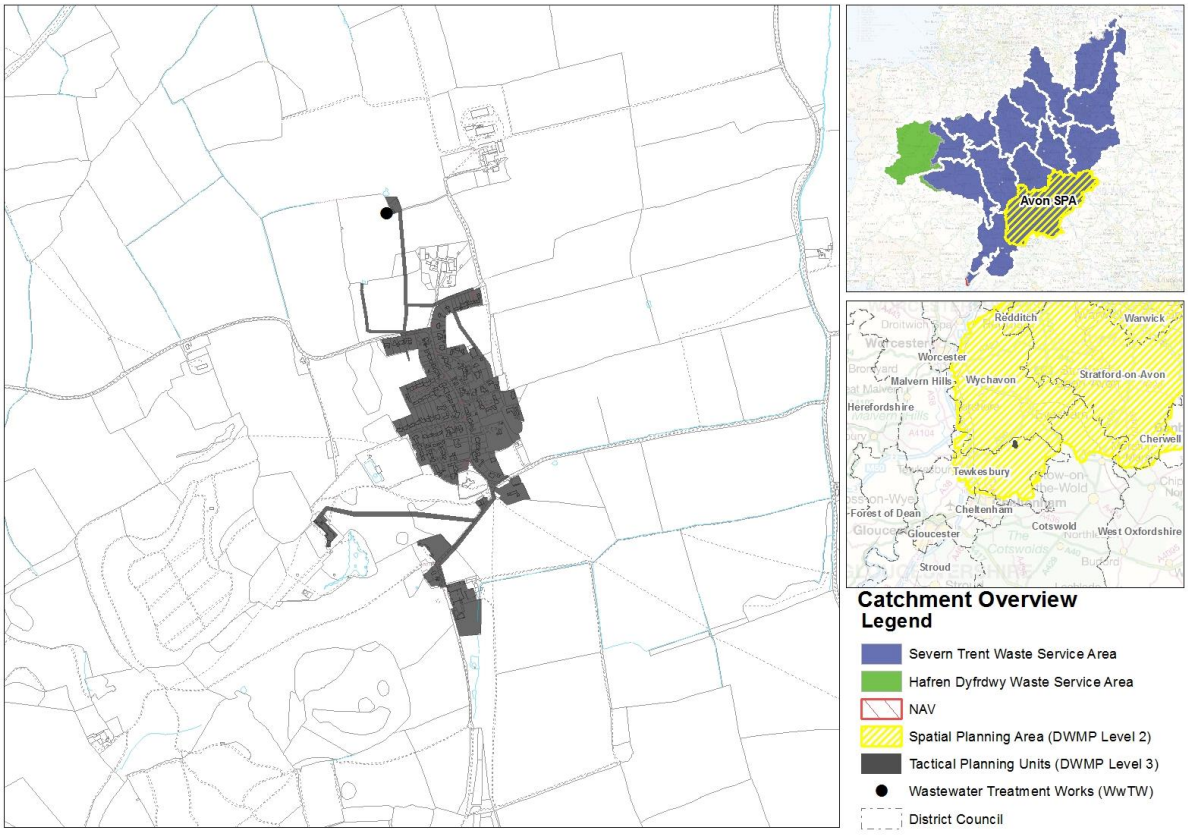
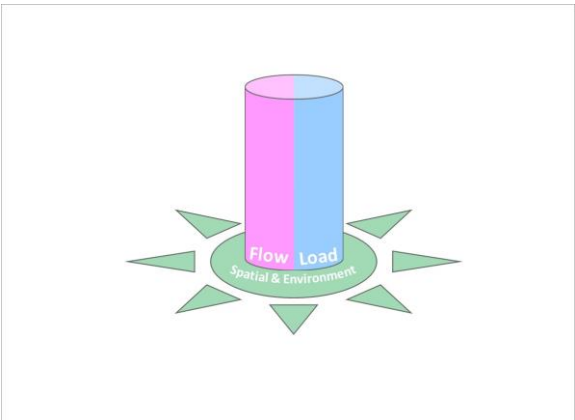


Figure 87 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 88 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 152 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Whilst the catchment triggered through the RBCS assessment, a pre-BRAVA review of the catchment indicated that the triggers were miss-representative of the long-term catchment risk. A decision was subsequently taken to downgrade the RBCS risk, resulting in the catchment not progressing any further along the DWMP process.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: DUNCHURCH (10402)

March 2023

WONDERFUL ON TAP

Overview

Dunchurch WwTW is located to the south west of Dunchurch and serves a residential population of 2,458. Treated effluent is discharged to the Thurlaston Brook. In addition to treating flows from Dunchurch (gravity) it also drains the outlying village of Draycote to the south west (gravity).

Key Statistics:

- Residential Population Served: 2,458
- This is our 232nd largest catchment across the whole of Severn Trent, and the 28th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 37.0km of public foul water sewers and 14.9km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

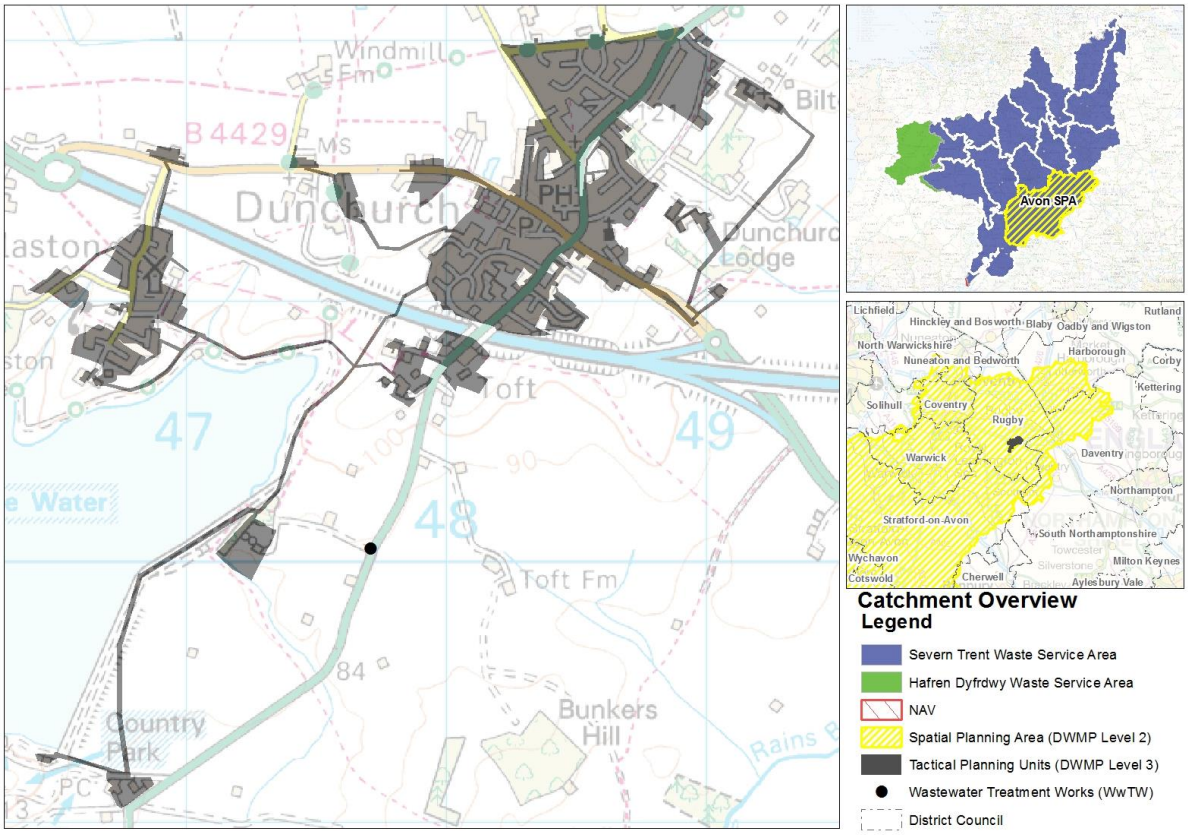
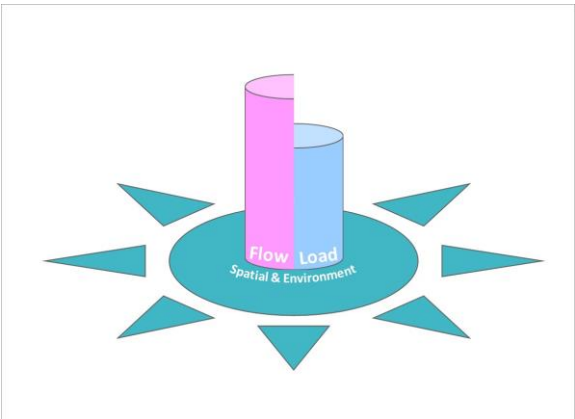


Figure 89 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 90 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 153 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 154 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 155 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 156 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 157 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
DUNNINGTON (10149)

March 2023

WONDERFUL ON TAP

SEVERN
TRENT

Overview

Dunnington WwTW serves a residential population of 91. Treated effluent is discharged to a tributary of the River Arrow.

Key Statistics:

- Residential Population Served: 91
- This is our 642nd largest catchment across the whole of Severn Trent, and the 128th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 2.1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

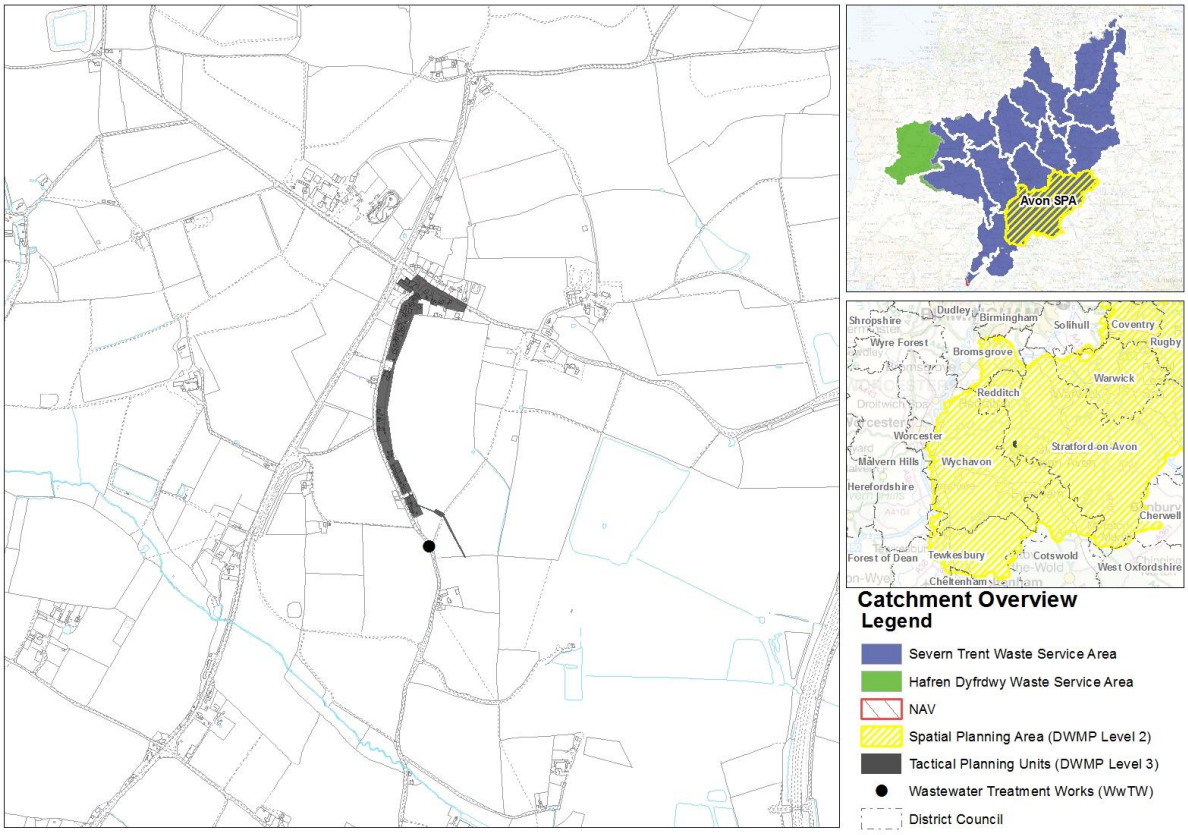
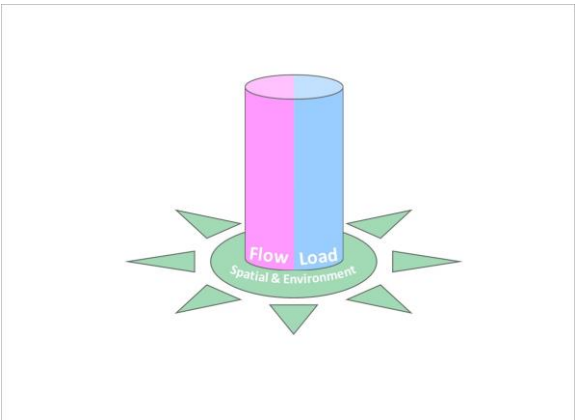


Figure 91 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 92 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 158 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Whilst the catchment triggered through the RBCS assessment, a pre-BRAVA review of the catchment indicated that the triggers were miss-representative of the long-term catchment risk. A decision was subsequently taken to downgrade the RBCS risk, resulting in the catchment not progressing any further along the DWMP process.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
EARLS COMMON (18128)

March 2023

WONDERFUL ON TAP

Overview

Earls Common WwTW serves a residential population of 87. Treated effluent is discharged to a tributary of the Shell Brook.

Key Statistics:

- Residential Population Served: 87
- This is our 649th largest catchment across the whole of Severn Trent, and the 132nd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 3.1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

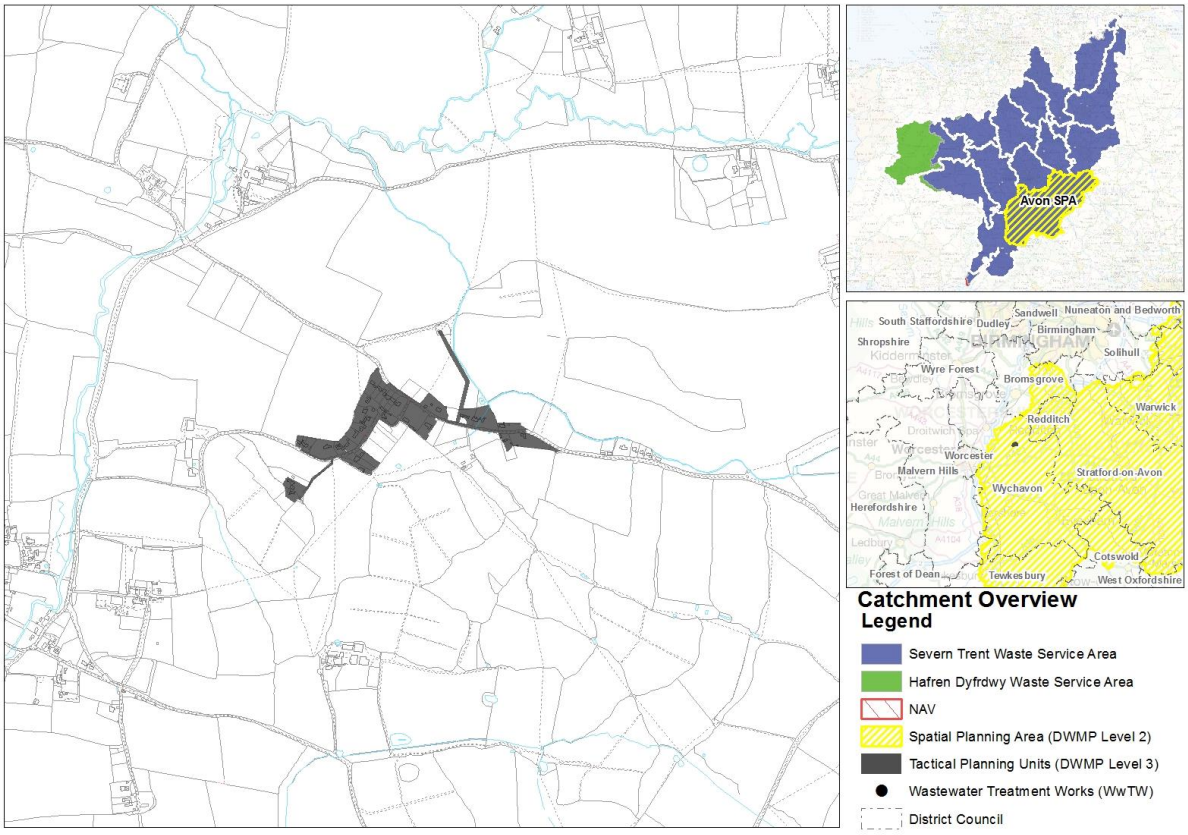
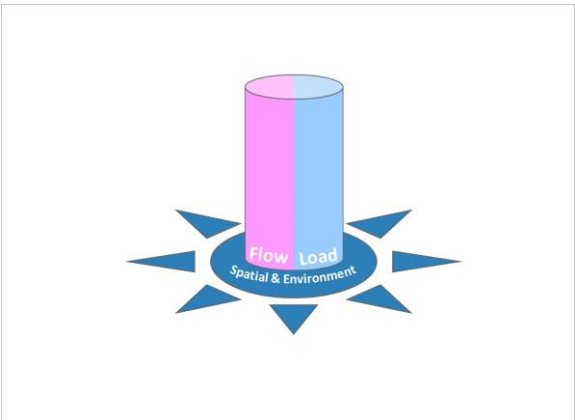


Figure 93 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 94 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 159 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: ECKINGTON (10033)

March 2023

WONDERFUL ON TAP

Overview

Eckington WwTW is located to the south of Eckington and serves a residential population of 1,125. Treated effluent is discharged to a tributary of the River Avon.

Key Statistics:

- Residential Population Served: 1,125
- This is our 311th largest catchment across the whole of Severn Trent, and the 45th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 10.7km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

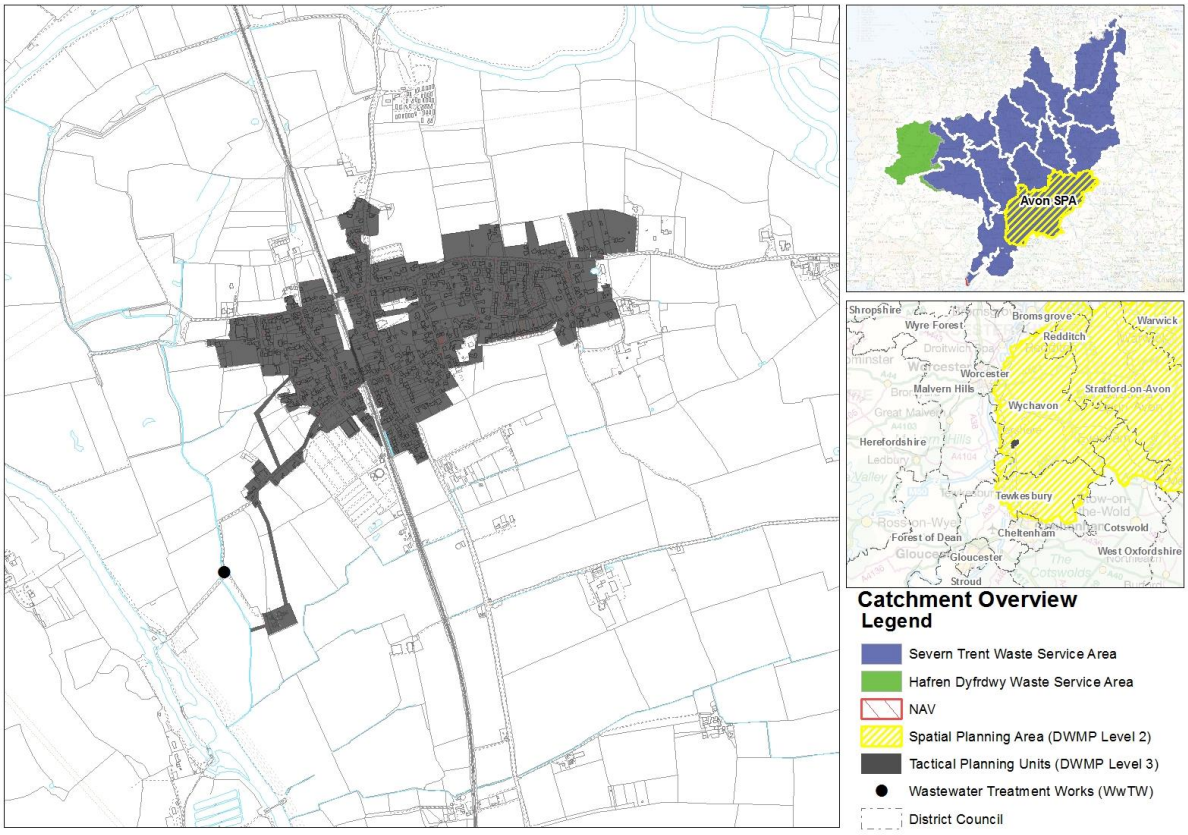
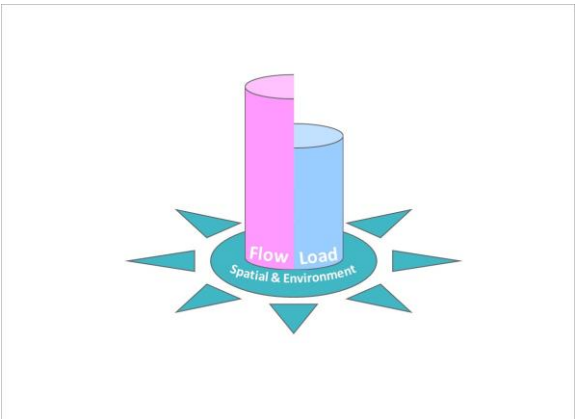


Figure 95 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 96 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 160 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	Yes
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 161 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 162 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 163 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	1	1	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 164 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: ETTINGTON (10321)

March 2023

WONDERFUL ON TAP

Overview

Ettington WwTW is located to the north east of Ettington and serves a residential population of 1,024. Treated effluent is discharged to a tributary of the River Dene.

Key Statistics:

- Residential Population Served: 1,024
- This is our 324th largest catchment across the whole of Severn Trent, and the 50th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 7.6km of public foul water sewers and 1.9km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

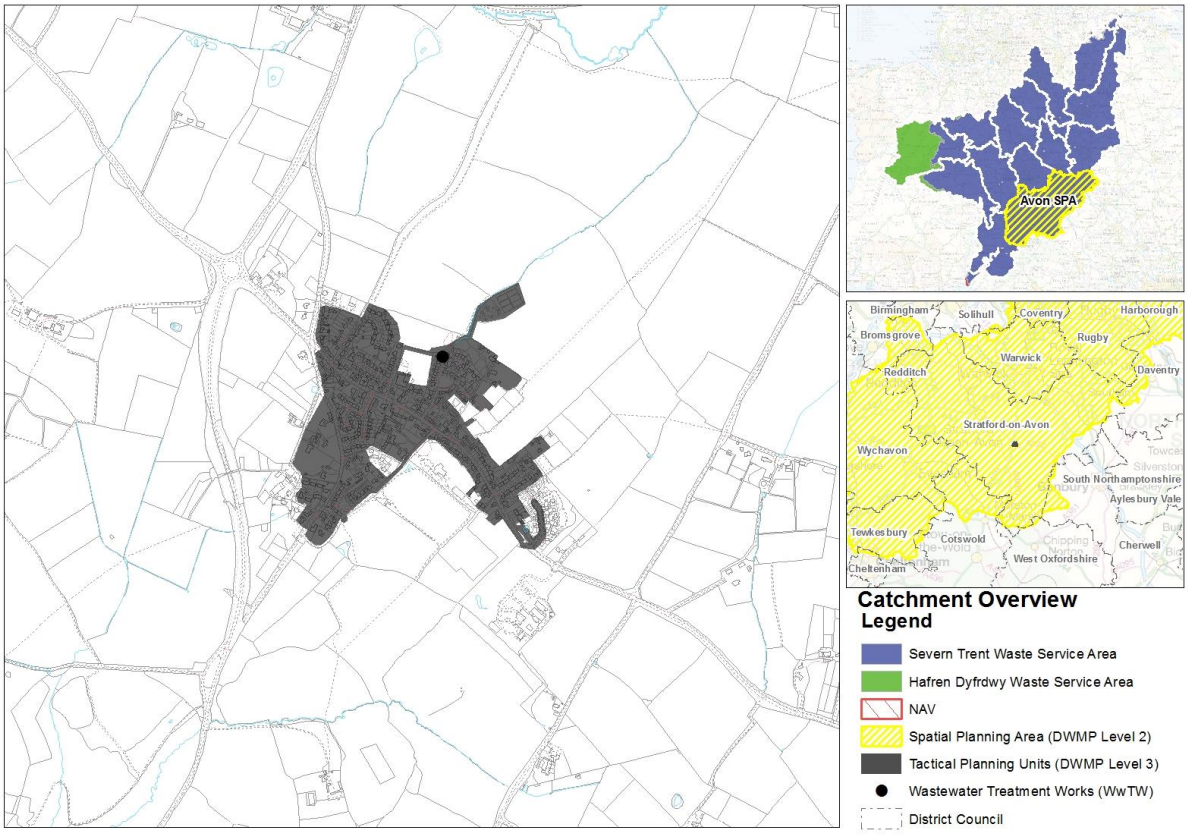
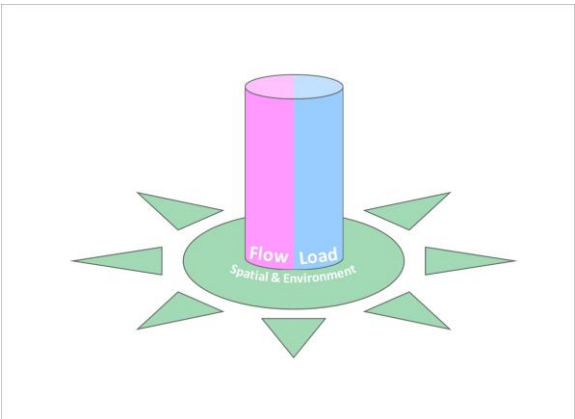


Figure 97 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 98 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 165 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 166 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 167 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 168 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 169 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
EVESHAM (10035)

March 2023

WONDERFUL ON TAP

SEVERN TRENT

Overview

Evesham WwTW is located to the north west of Evesham and serves a residential population of 29,016. Treated effluent is discharged to the River Avon. All flows to the works are pumped from Abbey Road terminal pumping station to the west of central Evesham.

Key Statistics:

- Residential Population Served: 29,016
- This is our 57th largest catchment across the whole of Severn Trent, and the 6th largest in the Avon Stategic Planning Area making up 3% of its population.
- It has 158.3km of public foul water sewers and 85.3km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

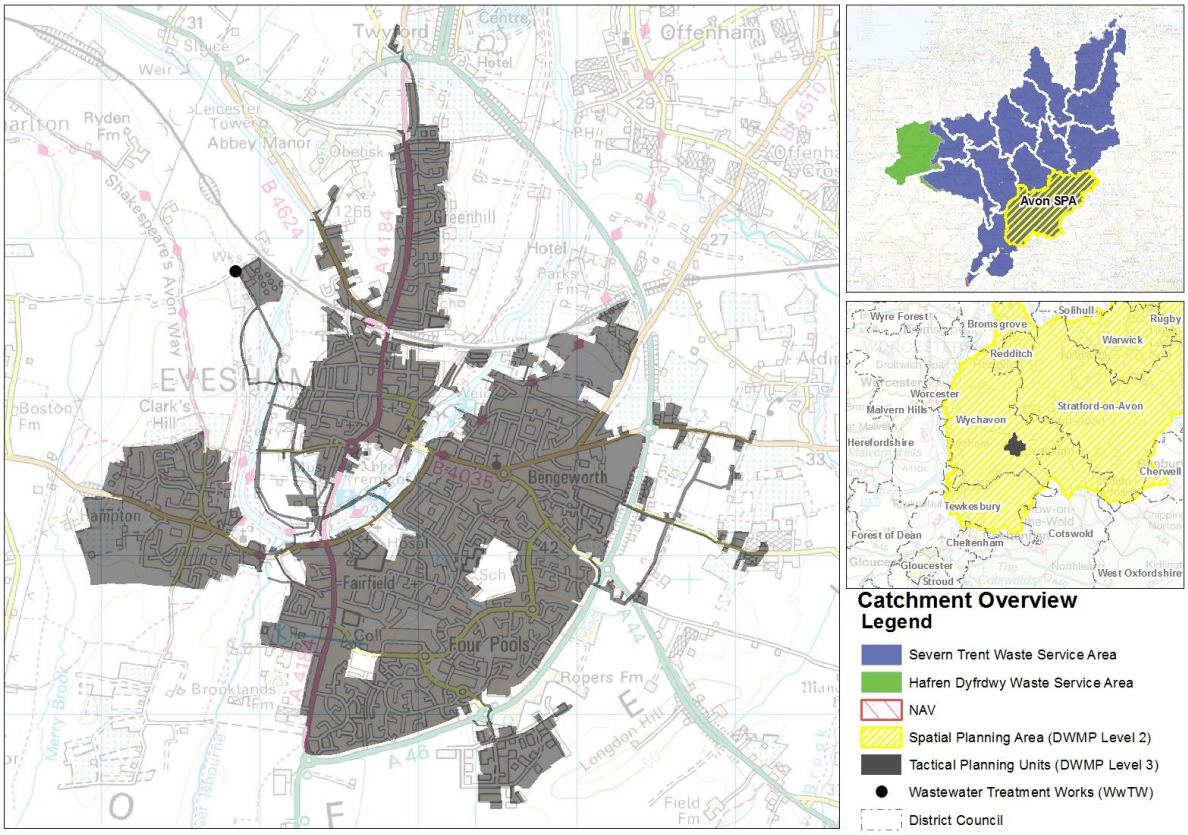
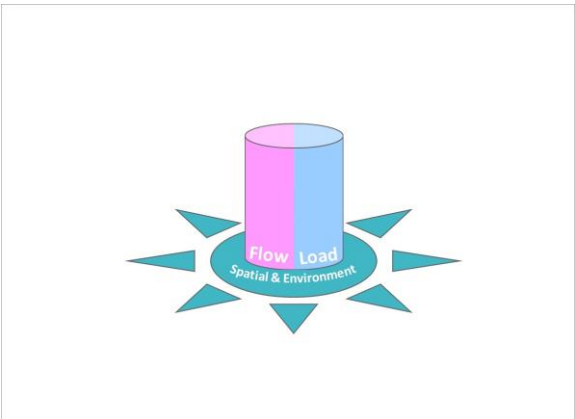


Figure 99 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



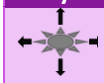
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 100 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 170 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	Yes
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	Yes
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 6 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 171 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 172 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 173 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	1	1	1	1	2	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	1	1	1	1	1	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 174 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
FENNY COMPTON (10425)

March 2023

WONDERFUL ON TAP

Overview

Fenny Compton WwTW is located to the north of Fenny Compton and serves a residential population of 803. Treated effluent is discharged to the River Itchen.

Key Statistics:

- Residential Population Served: 803
- This is our 353rd largest catchment across the whole of Severn Trent, and the 60th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 8.9km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

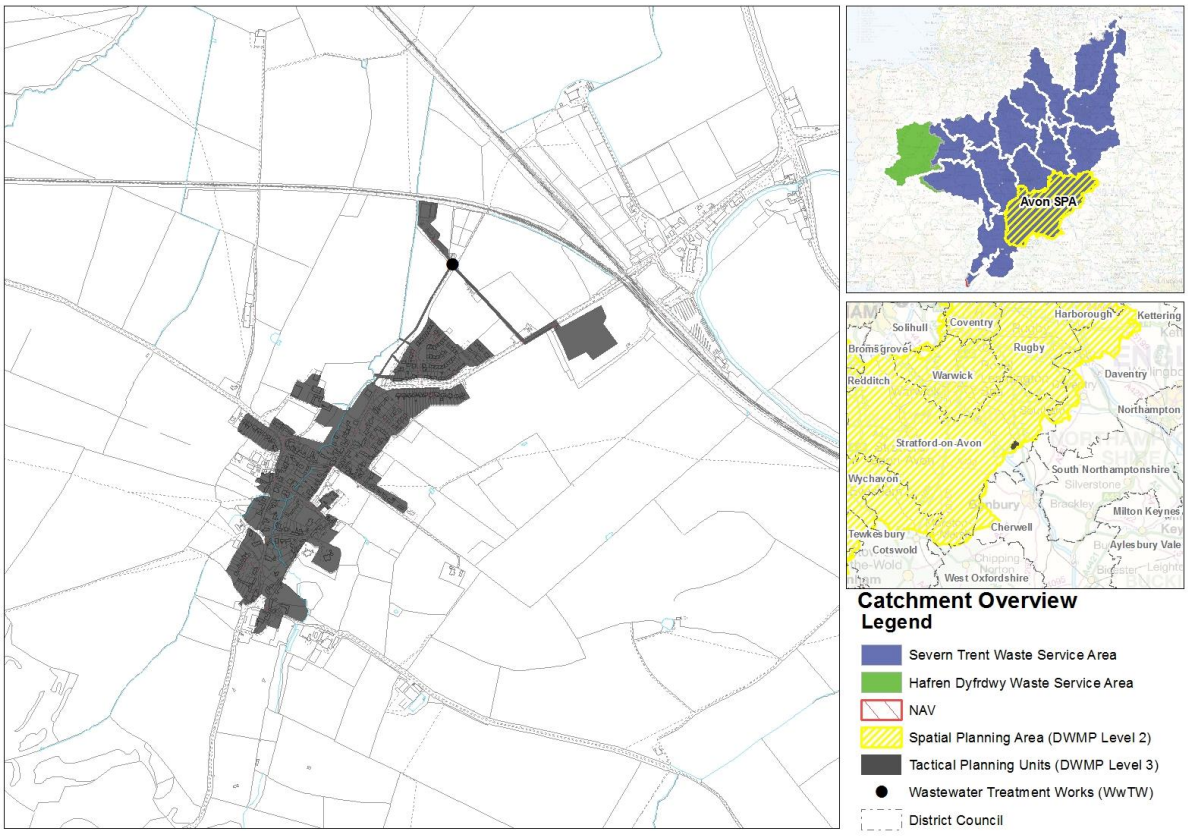
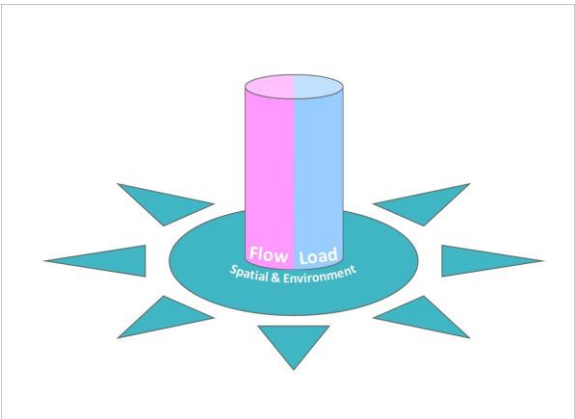


Figure 101 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



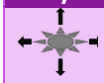
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 102 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 175 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**Yes**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 176 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 177 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 178 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	1	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 179 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
FINHAM (COVENTRY) (10451)

March 2023

WONDERFUL ON TAP

SEVERN
TRENT

Overview

Finham (Coventry) WwTW is located to the south of Coventry and serves a residential population of 484,157. Treated effluent is discharged to the River Sowe. In addition to treating flows from Coventry and Bedworth, the catchment also drains the outlying towns of Kenilworth and Stoneleigh to the west and south (pumped). The bulk of Coventry is drained by gravity.

Key Statistics:

- Residential Population Served: 484,157
- This is our 4th largest catchment across the whole of Severn Trent, and the largest in the Avon Stategic Planning Area making up 44% of its population.
- It has 1,966.3km of public foul water sewers and 1,389.4km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

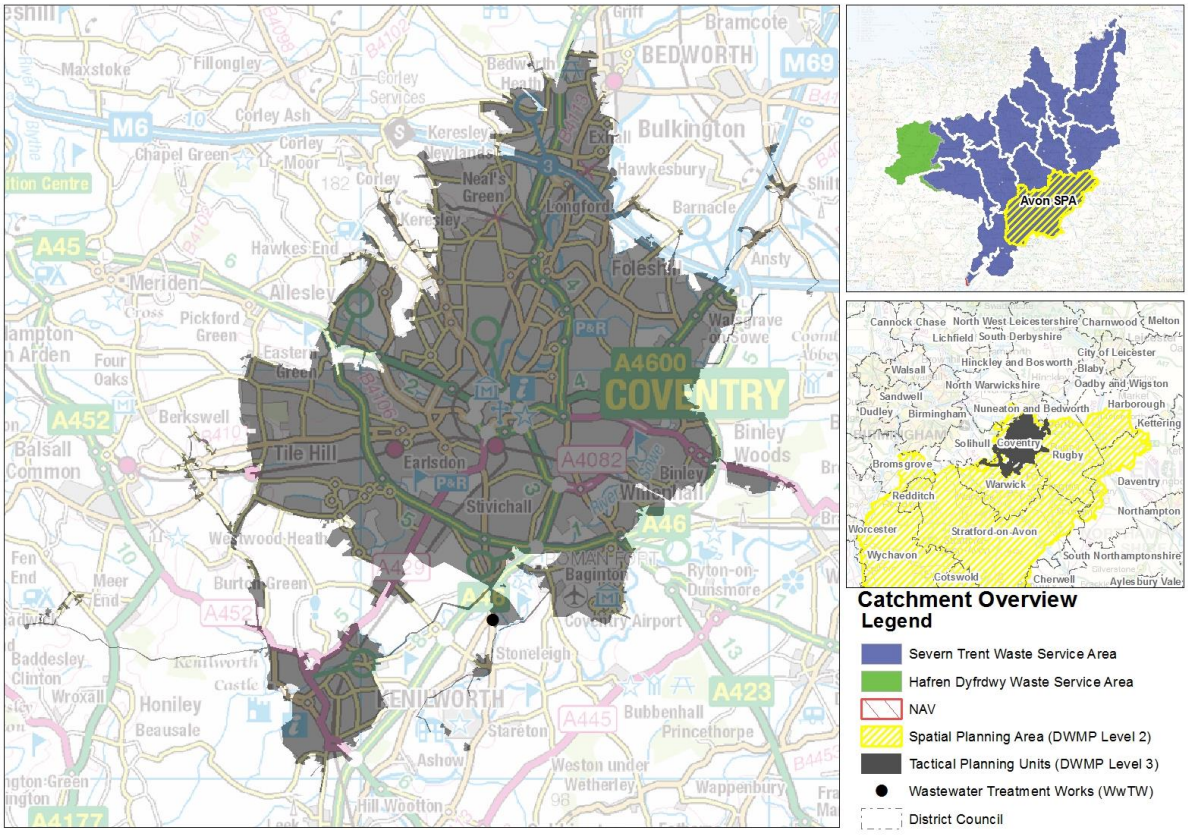
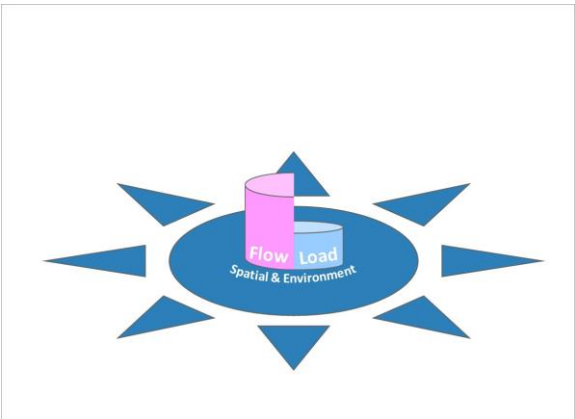


Figure 103 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



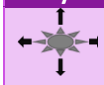
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 104 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 180 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	Yes
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	Yes
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 6 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 181 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 182 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 183 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	1	1	1	1	1	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	2	2	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	1	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 184 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	✓✓
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: FLECKNOE (15134)

March 2023

WONDERFUL ON TAP

Overview

Flecknoe WwTW serves a residential population of 179. Treated effluent is discharged to a tributary of the River Leam.

Key Statistics:

- Residential Population Served: 179
- This is our 562nd largest catchment across the whole of Severn Trent, and the 111th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 6.0km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

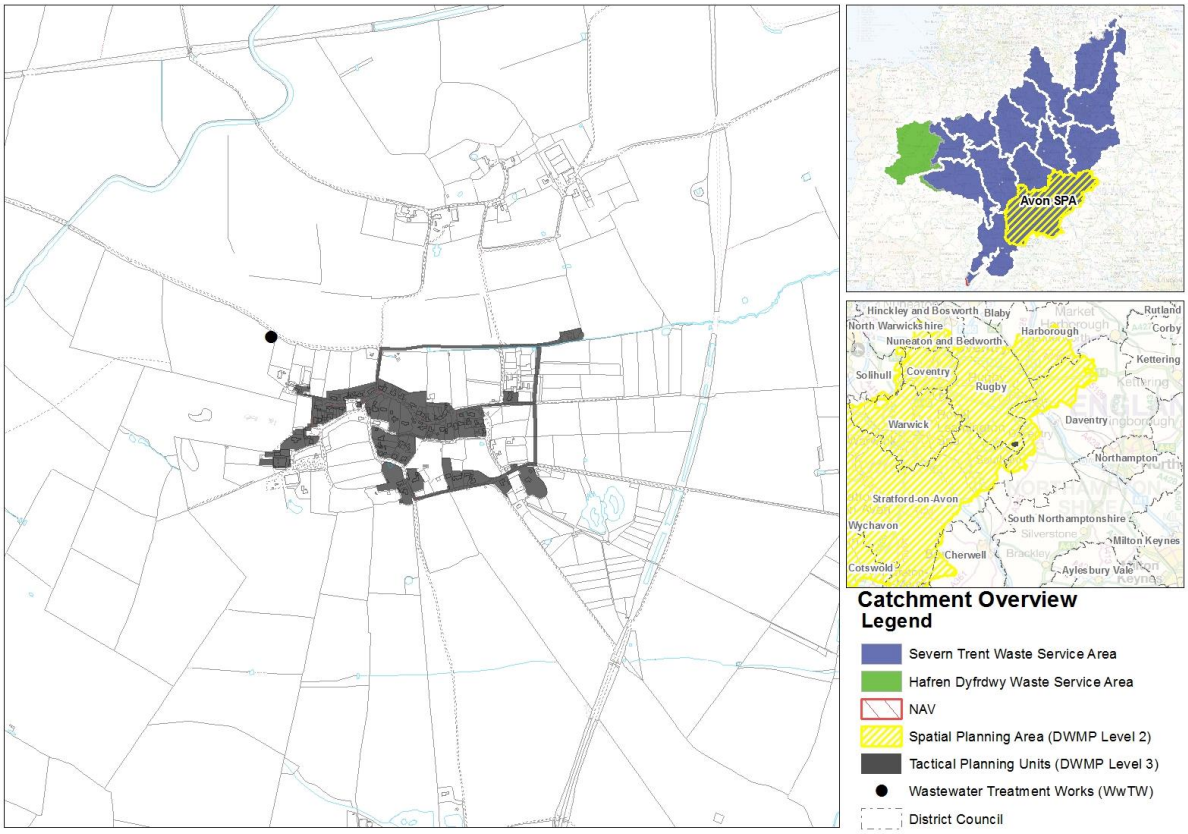
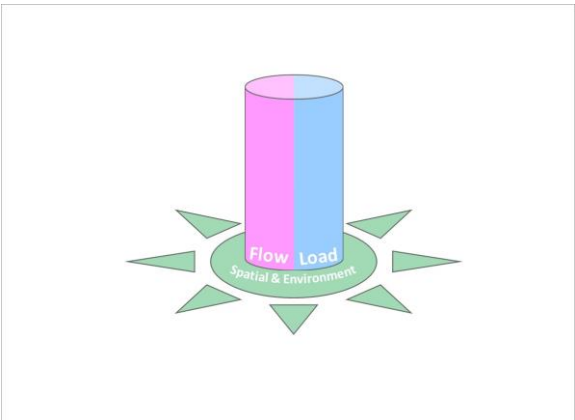


Figure 105 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 106 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 185 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
FLYFORD FLAVELL (10165)

March 2023

WONDERFUL ON TAP

Overview

Flyford Flavell WwTW is located to the north of Flyford Flavell and serves a residential population of 370. Treated effluent is discharged to the Piddle Brook. In addition to treating flows from Flyford Flavell (gravity) it also drains the outlying village of Kington to the north east (pumped) and North Piddle to the south (gravity).

Key Statistics:

- Residential Population Served: 370
- This is our 458th largest catchment across the whole of Severn Trent, and the 89th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 8.9km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

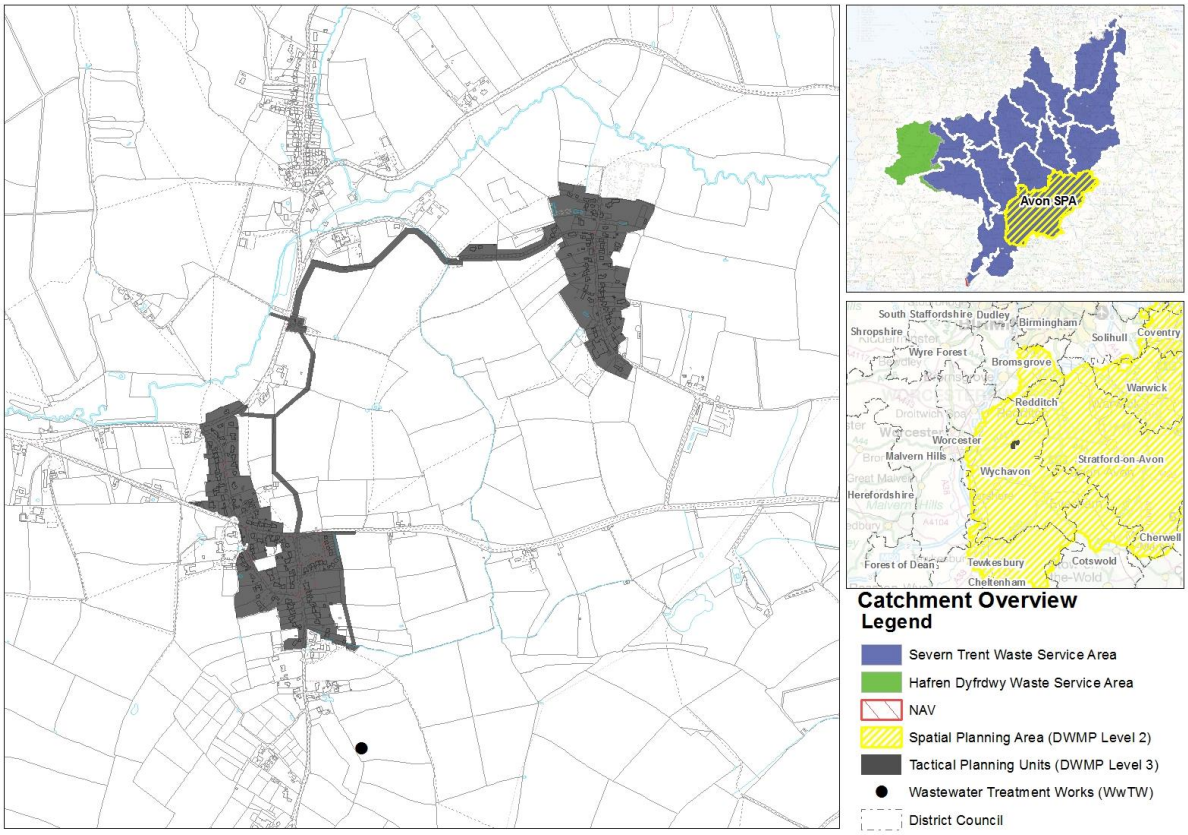


Figure 107 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".

Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 108 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 186 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 187 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 188 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 189 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	2	2	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 190 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: FRANKTON (10403)

March 2023

WONDERFUL ON TAP

Overview

Frankton WwTW is located centrally of the catchment and serves a residential population of 2,298. Treated effluent is discharged to a tributary of the River Leam. In addition to treating flows from Frankton it also drains the outlying villages of Birdingbury, Grandborough and Broadwell to the south East (pumped) and Princethorpe to the north west (pumped).

Key Statistics:

- Residential Population Served: 2,298
- This is our 239th largest catchment across the whole of Severn Trent, and the 33rd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 66.7km of public foul water sewers and 8.0km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

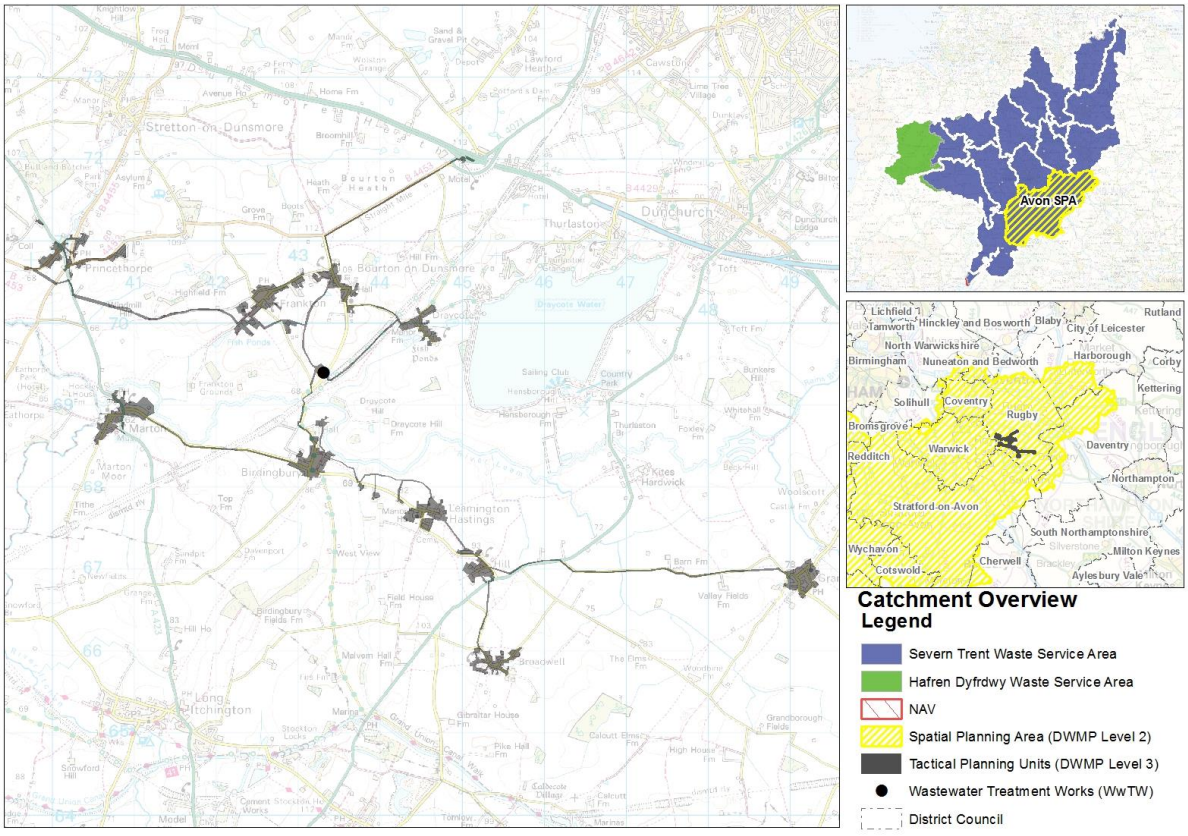
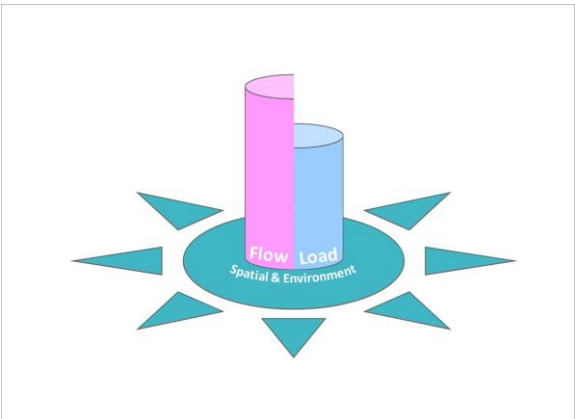


Figure 109 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 110 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 191 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 4 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 192 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 193 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 194 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 195 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: GAYDON (10384)

March 2023

WONDERFUL ON TAP

Overview

Gaydon WwTW serves a residential population of 417. Treated effluent is discharged to the Gaydon Brook.

Key Statistics:

- Residential Population Served: 417
- This is our 447th largest catchment across the whole of Severn Trent, and the 84th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 6.1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

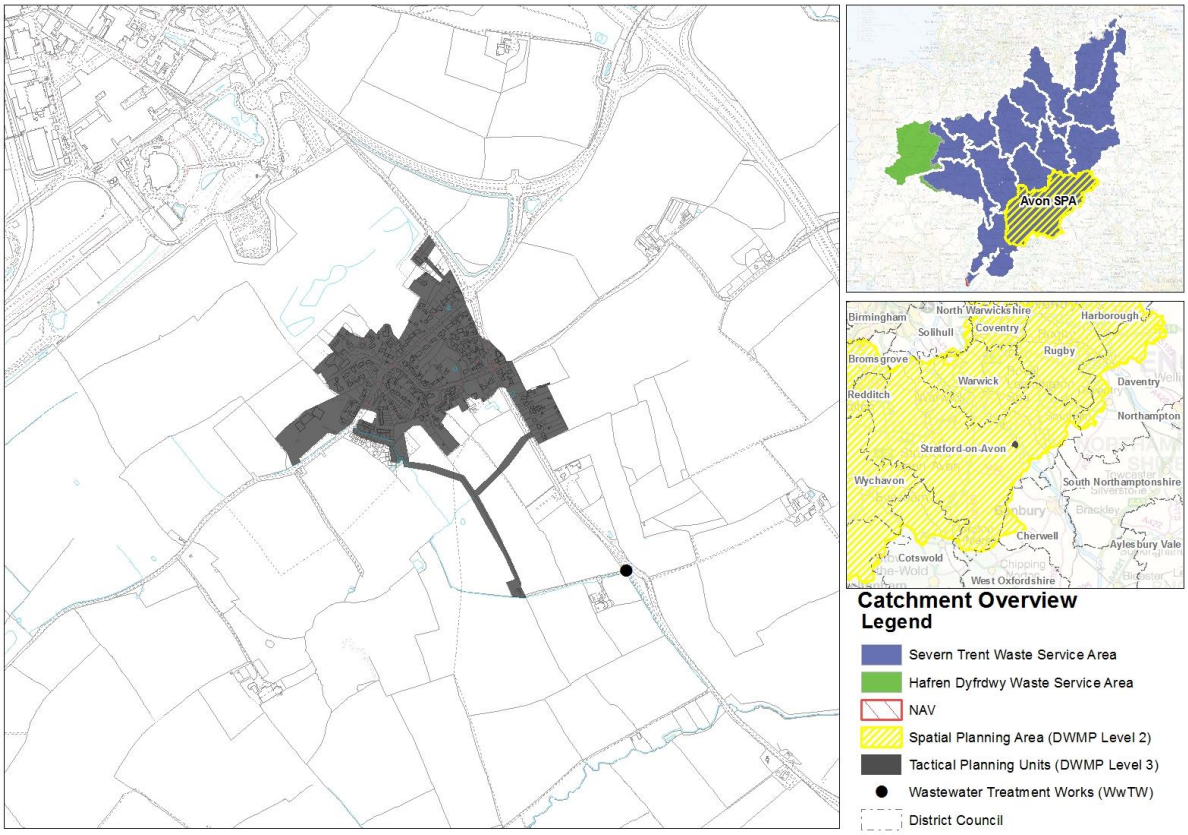
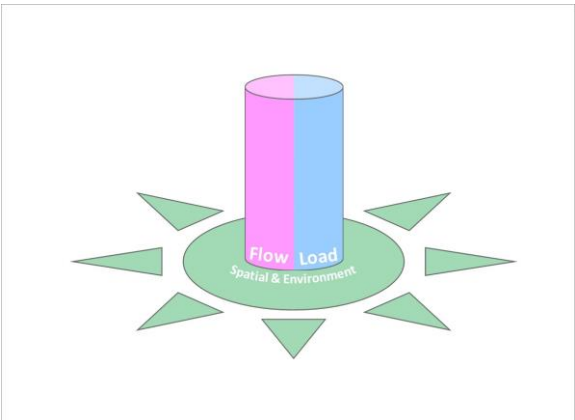


Figure 111 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 112 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 196 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
GLEBE FARM (11222)

March 2023

WONDERFUL ON TAP

Overview

Glebe Farm WwTW serves a residential population of 4. Treated effluent is discharged to a tributary of the River Avon.

Key Statistics:

- Residential Population Served: 4
- This is our 939th largest catchment across the whole of Severn Trent, and the 152nd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has <1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

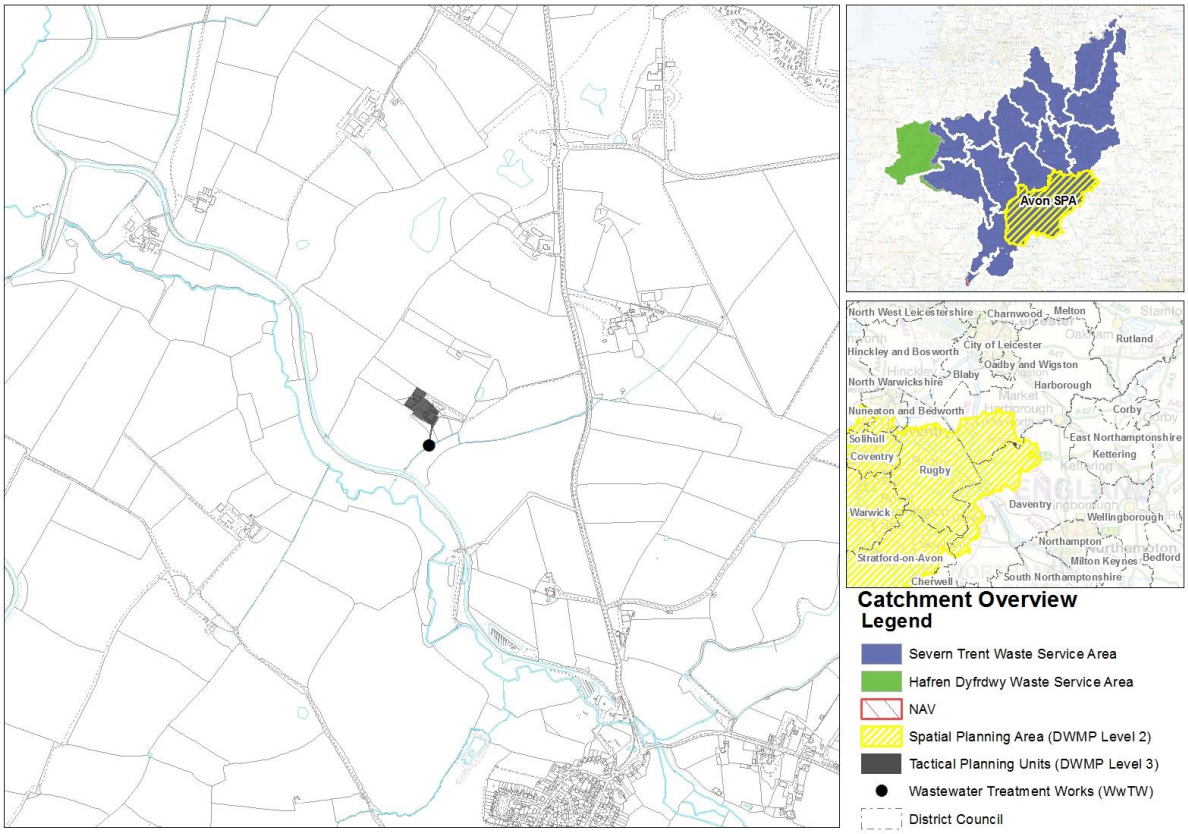
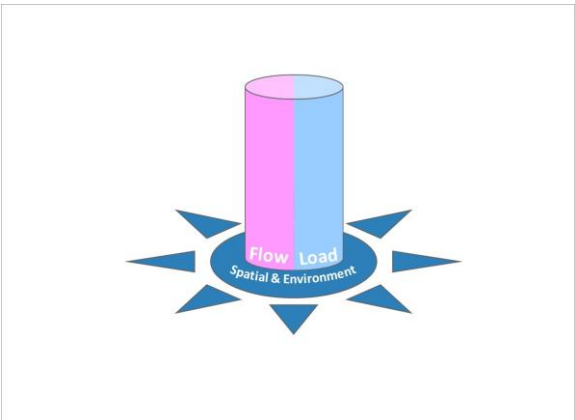


Figure 113 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 114 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 197 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
GRANGE FARM (11223)

March 2023

WONDERFUL ON TAP

Overview

Grange Farm WwTW serves a residential population of 2. Treated effluent is discharged to a tributary of the River Avon.

Key Statistics:

- Residential Population Served: 2
- This is our 945th largest catchment across the whole of Severn Trent, and the 153rd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has <1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

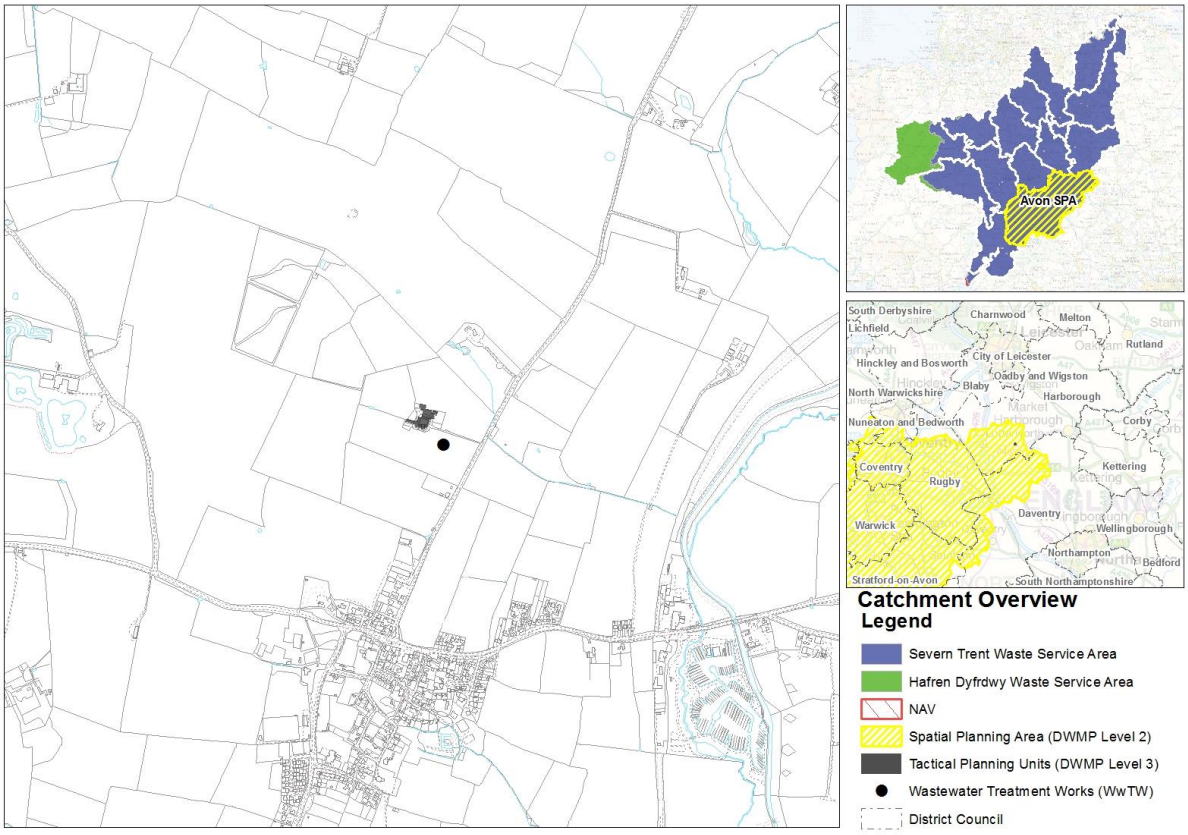
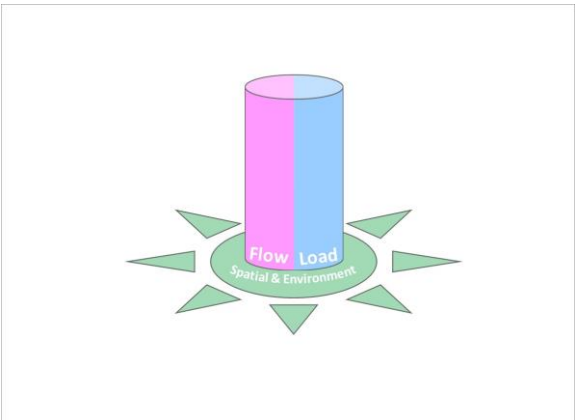


Figure 115 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 116 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 198 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
GREAT WASHBOURNE (10269)

March 2023

WONDERFUL ON TAP

Overview

Great Washbourne WwTW serves a residential population of 62. Treated effluent is discharged locally.

Key Statistics:

- Residential Population Served: 62
- This is our 694th largest catchment across the whole of Severn Trent, and the 137th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has <1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

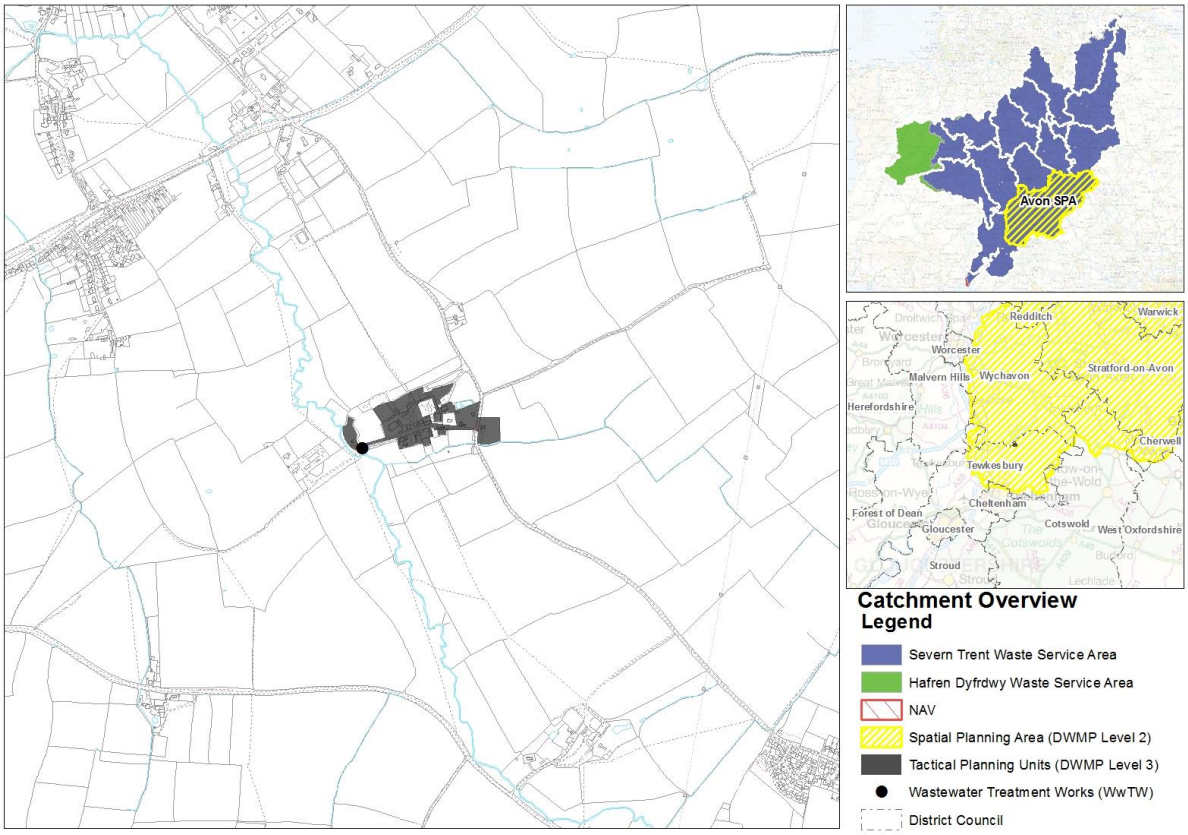
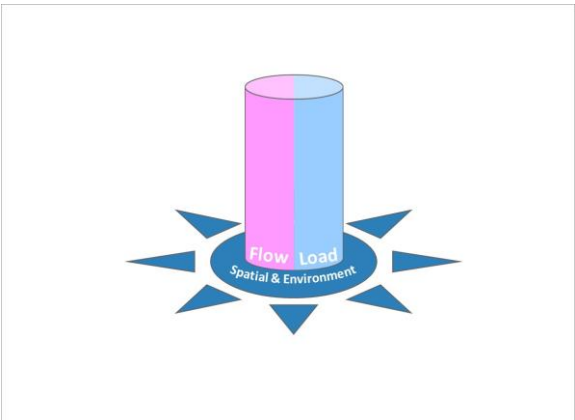


Figure 117 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 118 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 199 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
HANBURY (WORCESTERSHIRE) (17618)

March 2023

WONDERFUL ON TAP

Overview

Hanbury (Worcestershire) WwTW is located to the south west of Hanbury and serves a residential population of 333. Treated effluent is discharged to a tributary of the Seeley Brook.

Key Statistics:

- Residential Population Served: 333
- This is our 472nd largest catchment across the whole of Severn Trent, and the 94th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 5.2km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

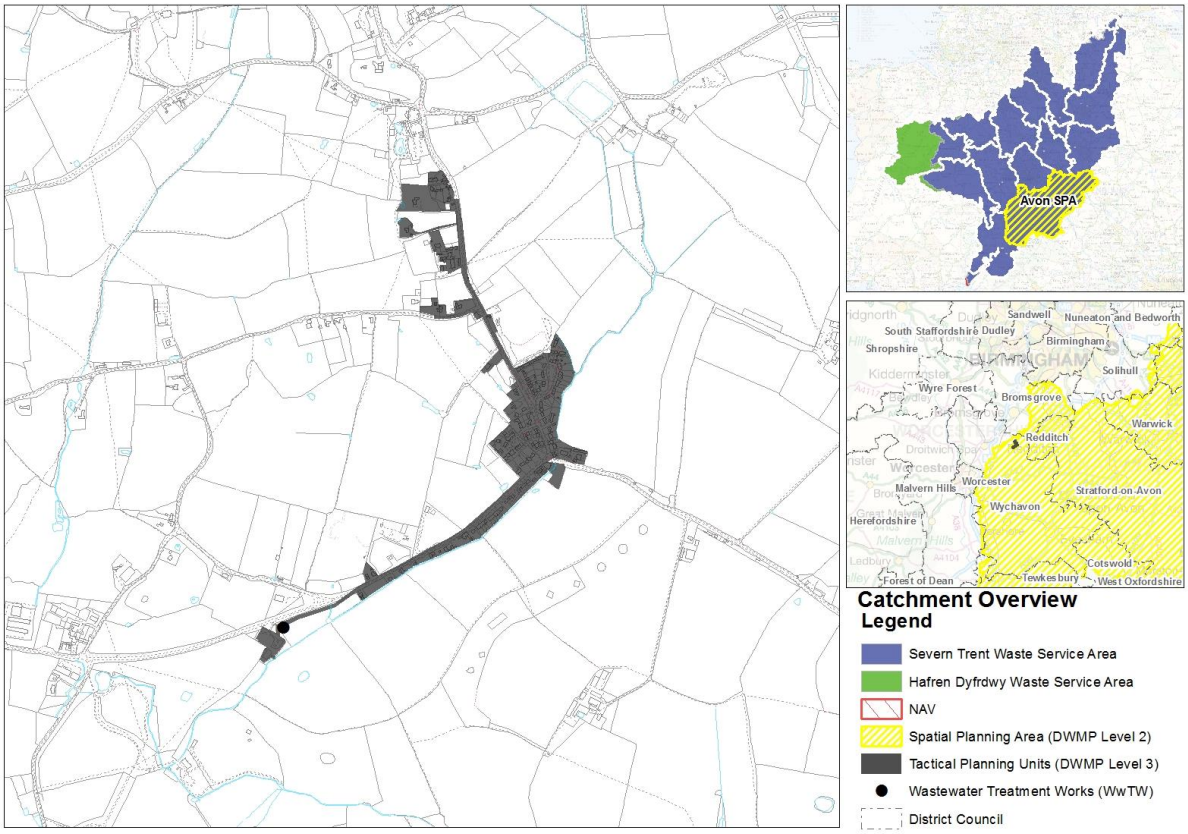
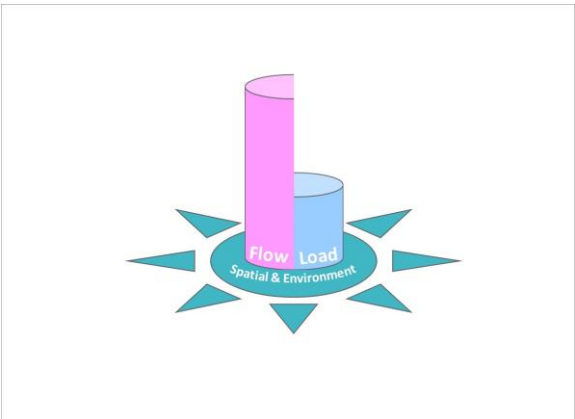


Figure 119 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



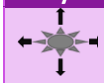
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 120 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 200 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 201 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 202 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 203 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	2	2	2	2	2	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	1	1	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 204 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
HARBOROUGH MAGNA (10385)

March 2023

WONDERFUL ON TAP

Overview

Harborough Magna WwTW is located to the south of Harborough Magna and serves a residential population of 443. Treated effluent is discharged to the Little Lawford Brook. In addition to treating flows from Harborough Magna (gravity it also drains the outlying village of Easenhall to the west (pumped).

Key Statistics:

- Residential Population Served: 443
- This is our 441st largest catchment across the whole of Severn Trent, and the 80th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 13.2km of public foul water sewers and 2.7km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

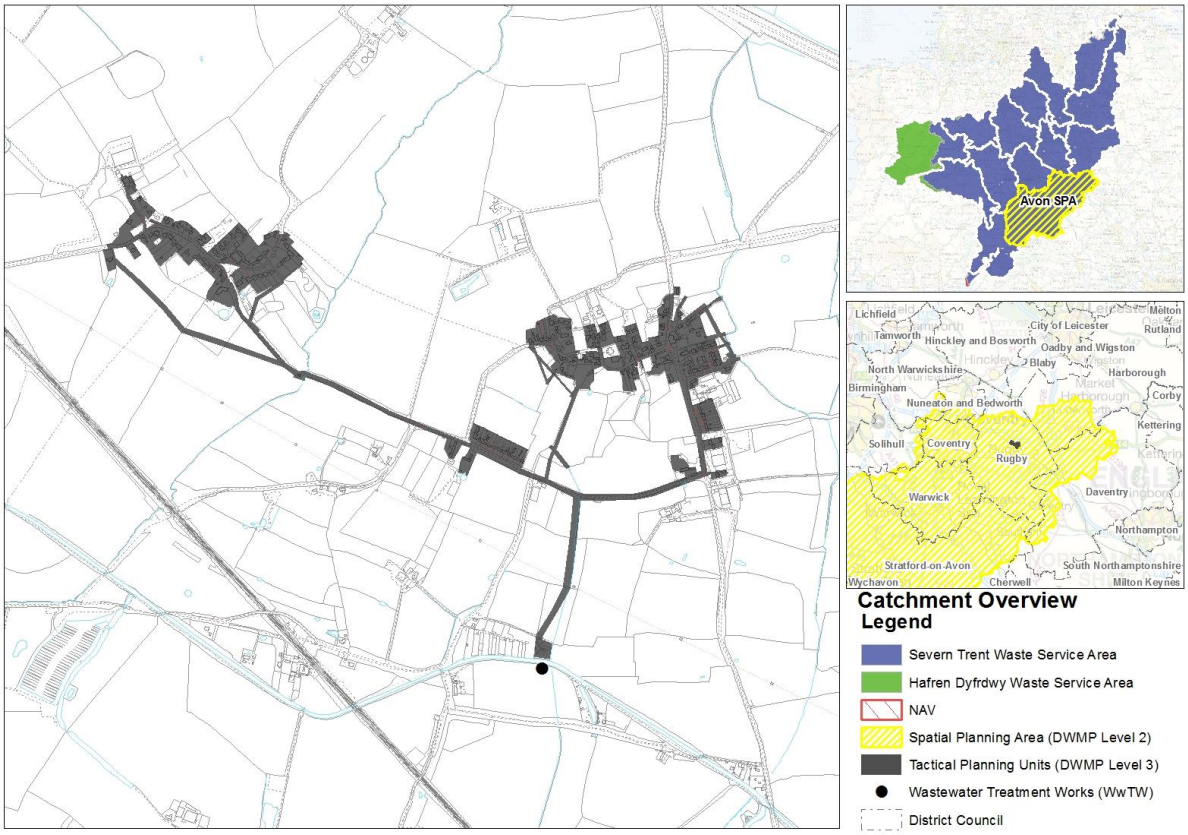
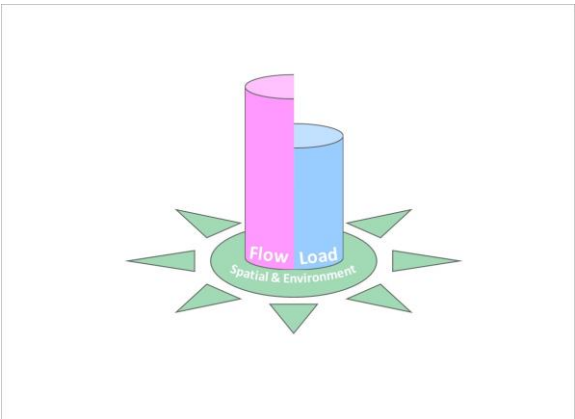


Figure 121 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 122 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 205 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 206 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 207 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 208 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 209 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

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Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
HARVINGTON WORKS (10161)

March 2023

WONDERFUL ON TAP

Overview

Harvington Works WwTW is located to the south of Harvington serves a residential population of 2,303. Treated effluent is discharged to the Harvington Brook. In addition to treating flows from Harvington (gravity), the catchment also drains the outlying villages of Lenchwich and Norton to the south west (gravity).

Key Statistics:

- Residential Population Served: 2,303
- This is our 238th largest catchment across the whole of Severn Trent, and the 32nd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 25.3km of public foul water sewers and 5.4km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

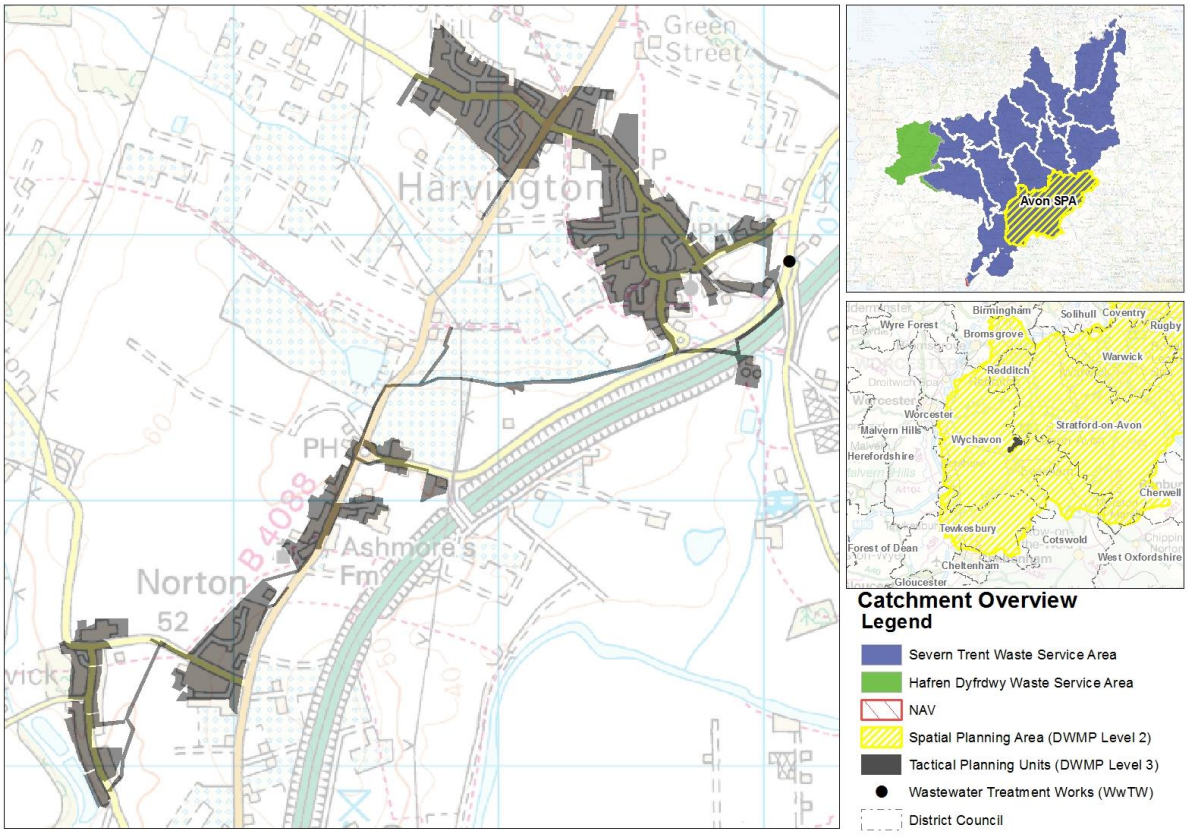
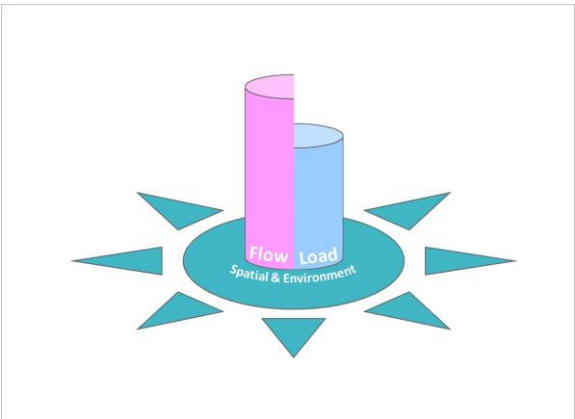


Figure 123 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 124 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 210 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 211 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 212 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 213 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 214 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
HINTON-ON-THE-GREEN (10047)

March 2023

WONDERFUL ON TAP

Overview

Hinton-On-The-Green WwTW is located to north of Hinton on the Green and serves a residential population of 207. Treated effluent is discharged to the River Isbourne.

Key Statistics:

- Residential Population Served: 207
- This is our 539th largest catchment across the whole of Severn Trent, and the 104th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 6.0km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

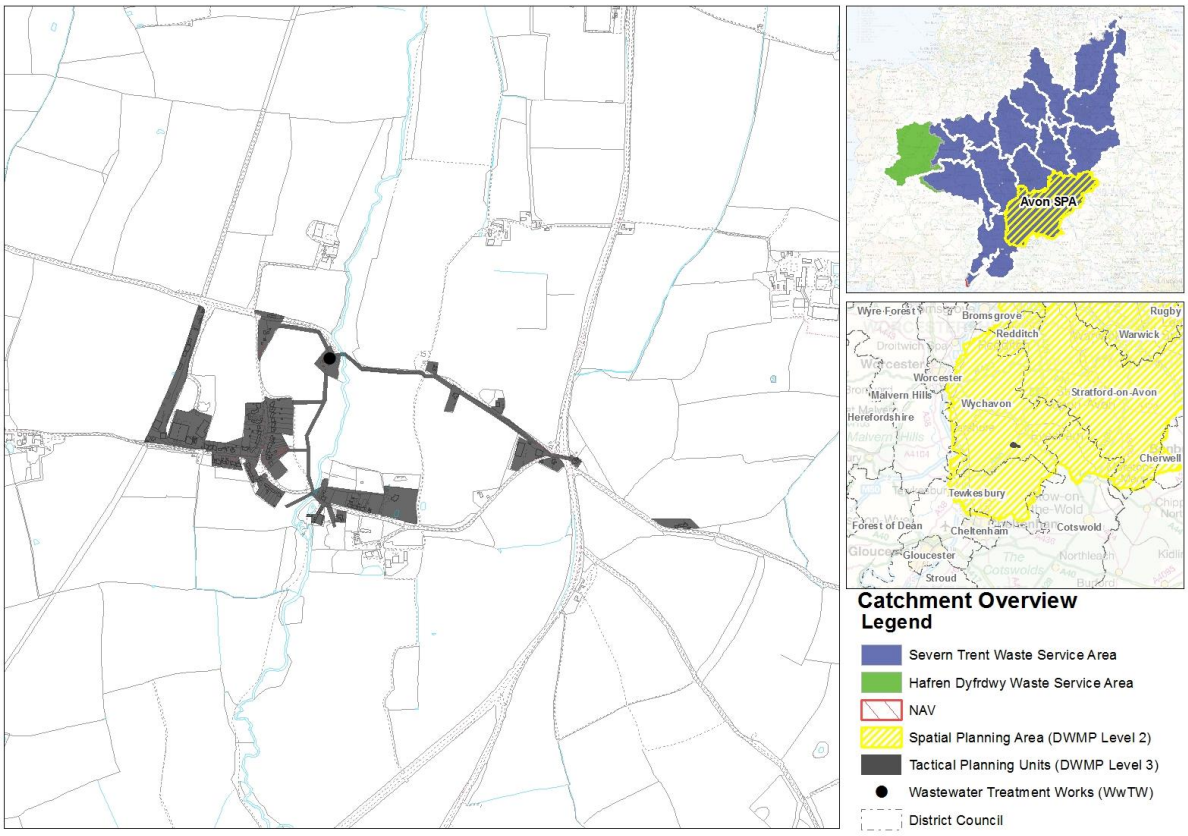
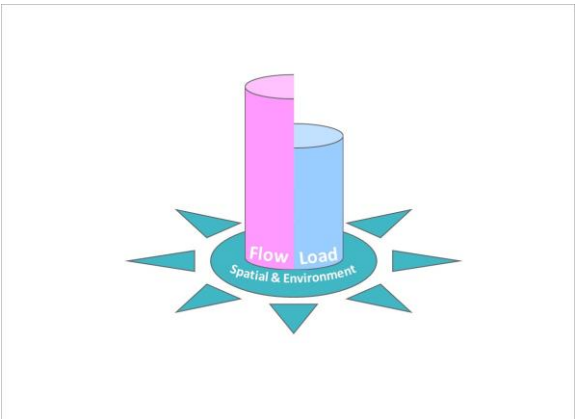


Figure 125 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



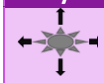
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 126 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 215 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 216 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 217 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 218 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 219 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
HONEYBOURNE (10051)

March 2023

WONDERFUL ON TAP

Overview

Honeybourne WwTW is located to the south of Honeybourne and serves a population of 4,970. Treated effluent is discharged to the Honeybourne Brook. In addition to treating pumped flows from Honeybourne, the catchment also recieves gravity flow from the south which includes flows from the villages of Willersey, Saintbury, Weston Subedge, Aston Subedge and Mickleton.

Key Statistics:

- Residential Population Served: 4,970
- This is our 169th largest catchment across the whole of Severn Trent, and the 22nd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 88.4km of public foul water sewers and 4.8km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

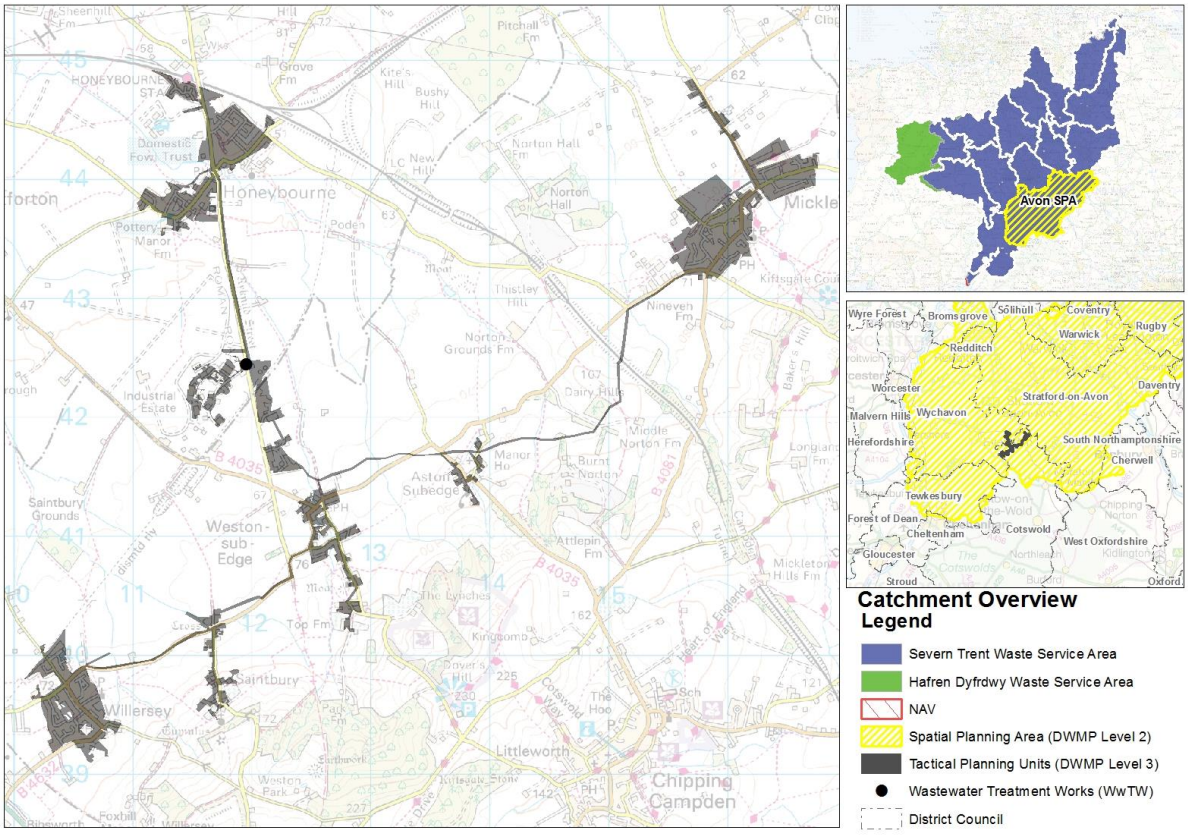
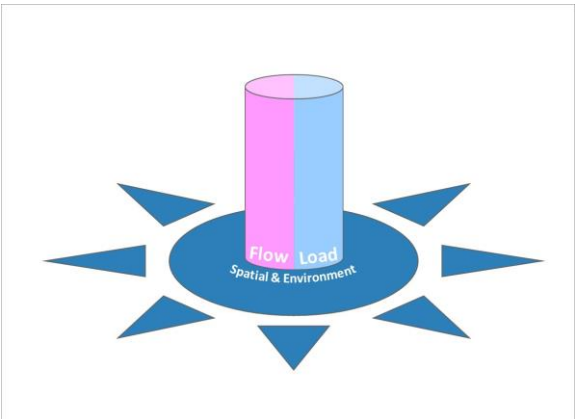


Figure 127 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



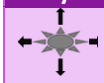
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 128 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 220 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 221 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 222 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 223 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	1	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 224 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	✓
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: ILMINGTON (10340)

March 2023

WONDERFUL ON TAP

Overview

Ilmington WwTW is located in the north east of Ilmington and serves a residential population of 726. Treated effluent is discharged to the Fosse Way Brook.

Key Statistics:

- Residential Population Served: 726
- This is our 371st largest catchment across the whole of Severn Trent, and the 67th largest in the Avon Strategic Planning Area making up <1% of its population.
- It has 9.6km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

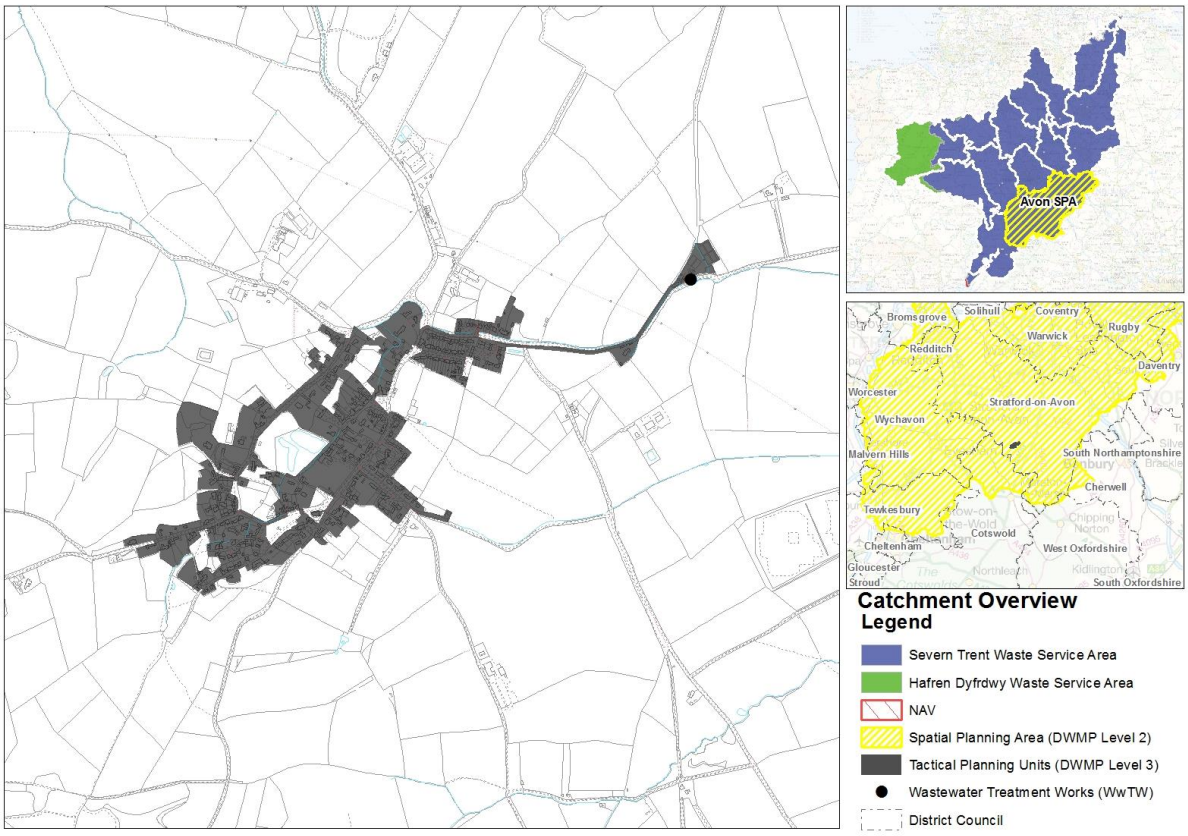
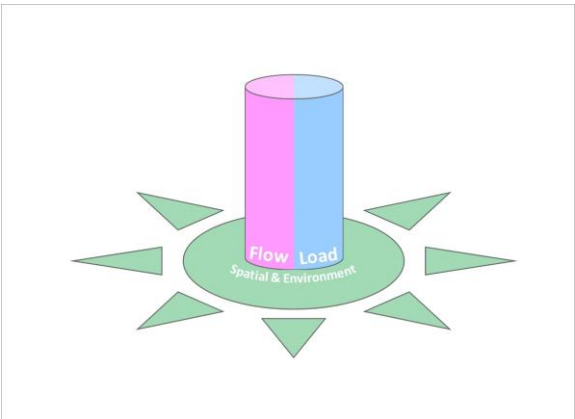


Figure 129 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 130 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 225 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 226 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 227 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 228 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	2	2	2	2	2	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 229 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: INKBERROW (10166)

March 2023

WONDERFUL ON TAP

Overview

Inkberrow WwTW is located to the south of Inkberrow and serves a residential population of 1,754. Treated effluent is discharged to a tributary of the Piddle Brook. Flows arrive by gravity.

Key Statistics:

- Residential Population Served: 1,754
- This is our 272nd largest catchment across the whole of Severn Trent, and the 38th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 11.1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

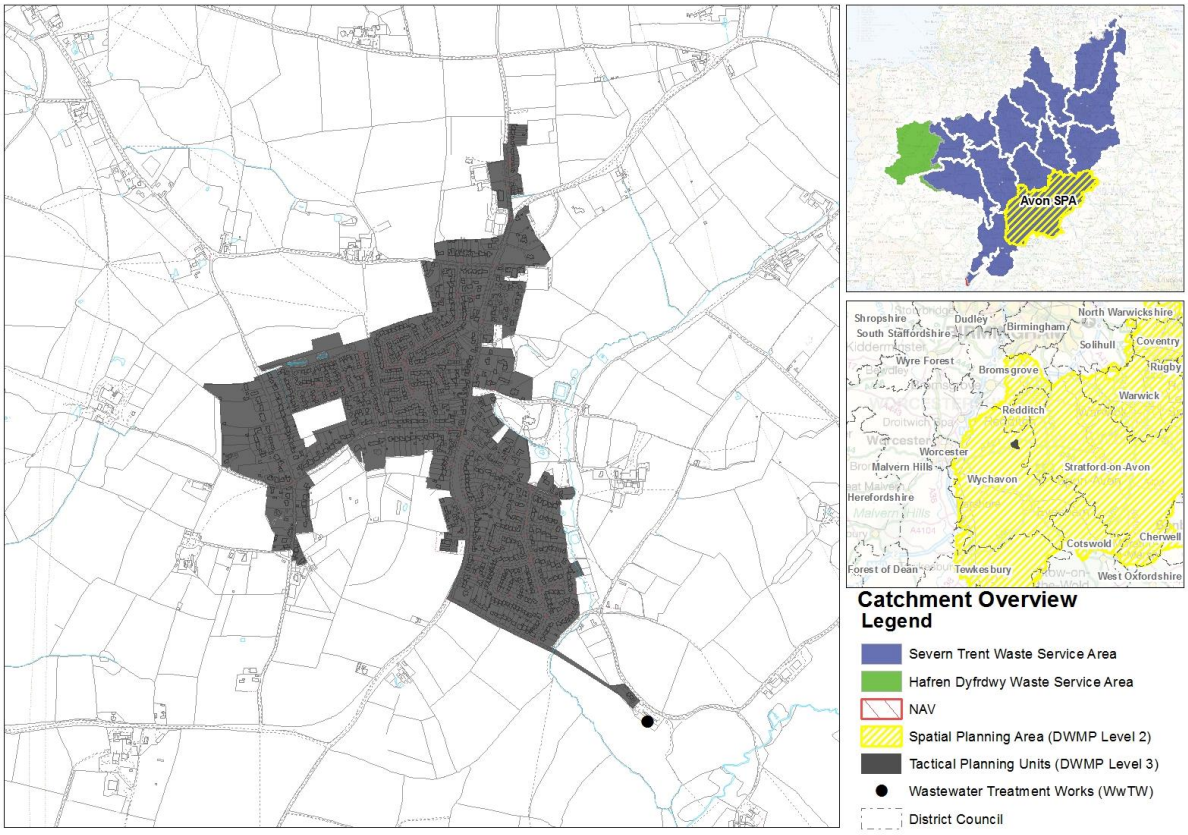
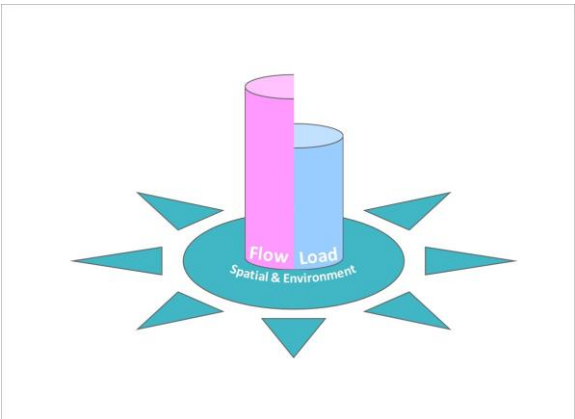


Figure 131 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 132 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 230 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 231 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 232 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 233 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 234 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
ITCHEN BANK (SOUTHAM) (10434)

March 2023

WONDERFUL ON TAP

SEVERN TRENT

Overview

Itchen Bank (Southam) WwTW is located to the north west of Southam and serves a residential population of 15,317. Treated effluent is discharged to the River Itchen. In addition to treating flows from Southam, the catchment also drains the outlying villages of Long Itchington in the north (pumped), Stockton to the north east (pumped), Harbury and Bishops Itchington to the south (pumped) and Ladbroke to the south east (pumped).

Key Statistics:

- Residential Population Served: 15,317
- This is our 91st largest catchment across the whole of Severn Trent, and the 10th largest in the Avon Stategic Planning Area making up 1% of its population.
- It has 144.2km of public foul water sewers and 49.7km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

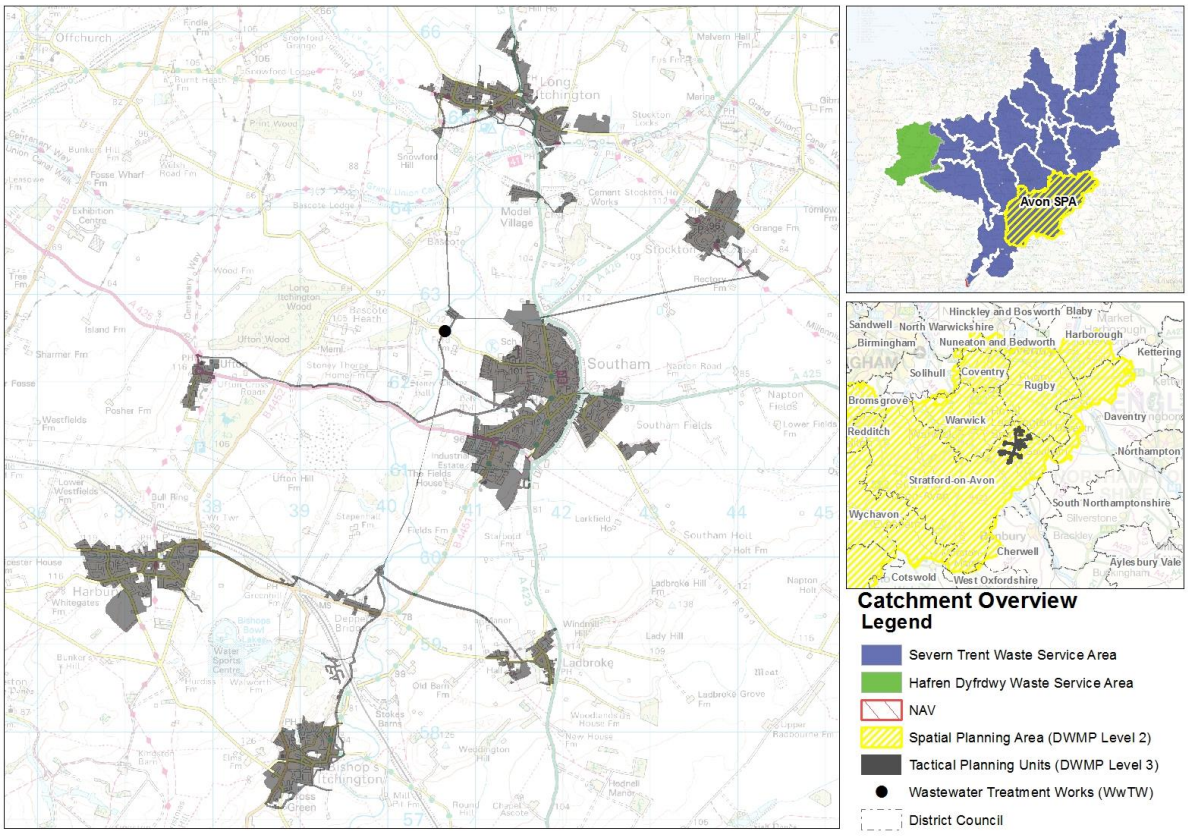
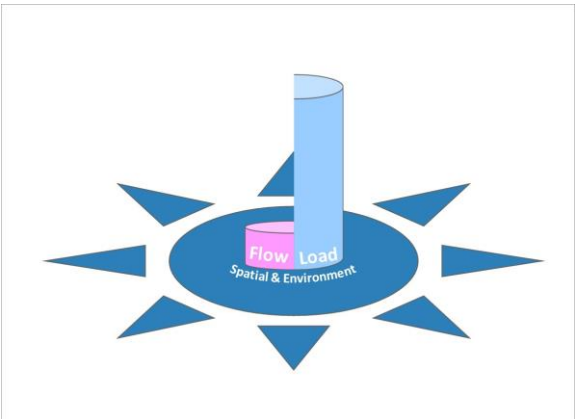


Figure 133 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 134 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 235 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	Yes
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 8 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 236 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 237 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 238 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	1	1	1	1	1	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	1	1	1	1	1	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	2	2	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 239 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: KILSBY (10404)

March 2023

WONDERFUL ON TAP

Overview

Kilsby WwTW is located to the West of Kilsby and serves a residential population of 2,430. Treated effluent is discharged to the Rains Brook. In addition to treating flows from Kilsby, it also drains the outlying village of Barby (gravity).

Key Statistics:

- Residential Population Served: 2,430
- This is our 233rd largest catchment across the whole of Severn Trent, and the 29th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 21.8km of public foul water sewers and 3.6km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

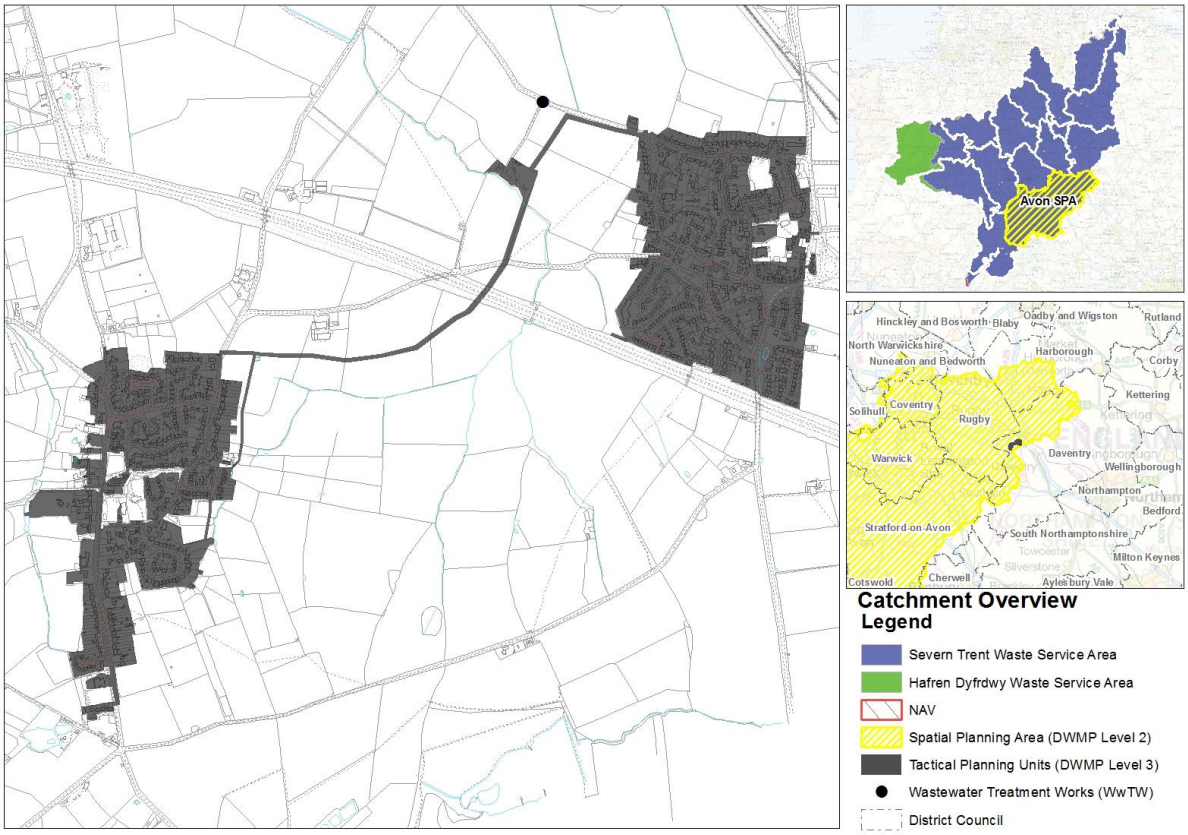
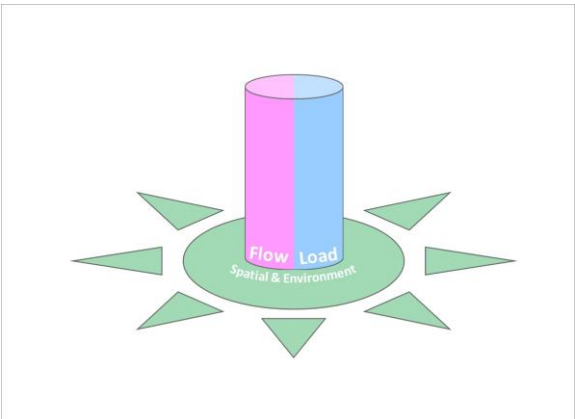


Figure 135 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 136 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 240 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 241 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 242 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 243 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 244 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	•
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: KIMCOTE (11229)

March 2023

WONDERFUL ON TAP

Overview

Kimcote WwTW is located to the south of the village of Kimcote and serves a residential population of 1,774. Treated effluent is discharged to the River Swift. In addition to treating flows from Kimcote, the catchment also drains the outlying villages of Walton and Upper Bruntingthorpe to the north east (gravity), and Gilmorton to the north west (gravity).

Key Statistics:

- Residential Population Served: 1,774
- This is our 270th largest catchment across the whole of Severn Trent, and the 37th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 24.2km of public foul water sewers and 5.6km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

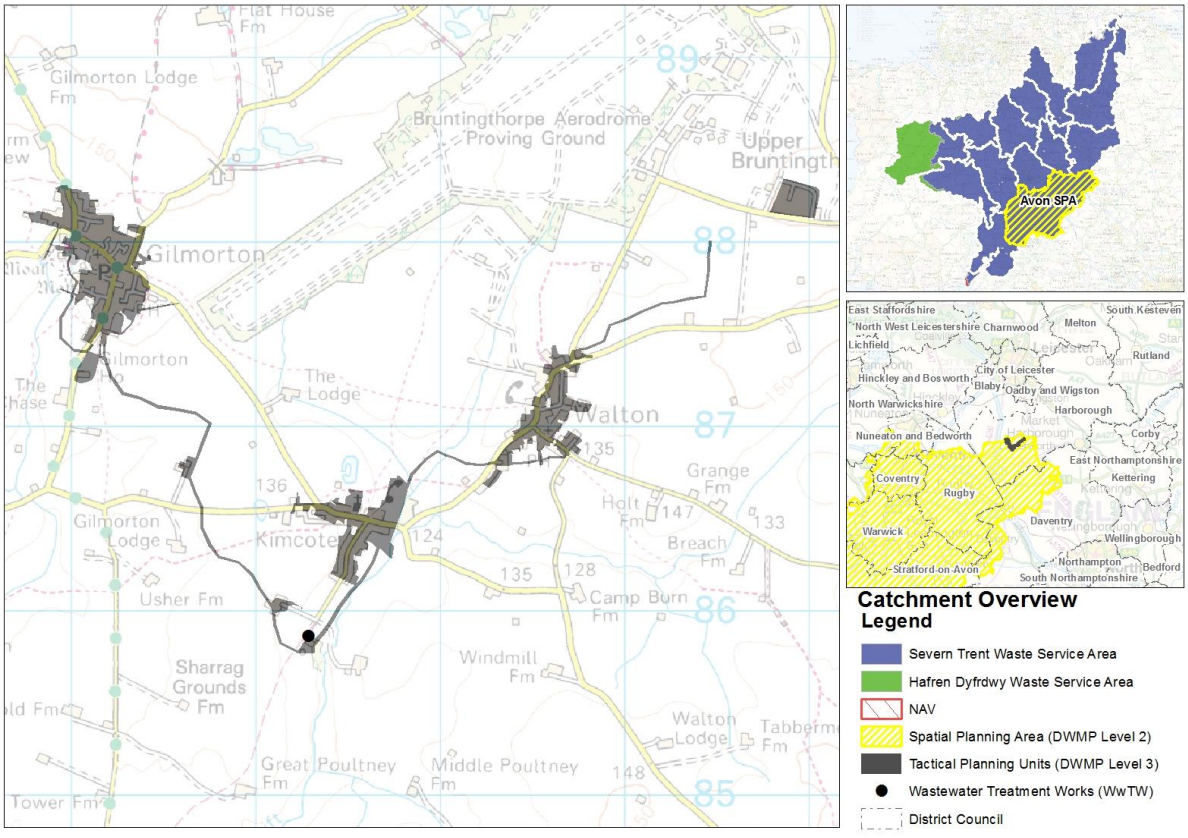
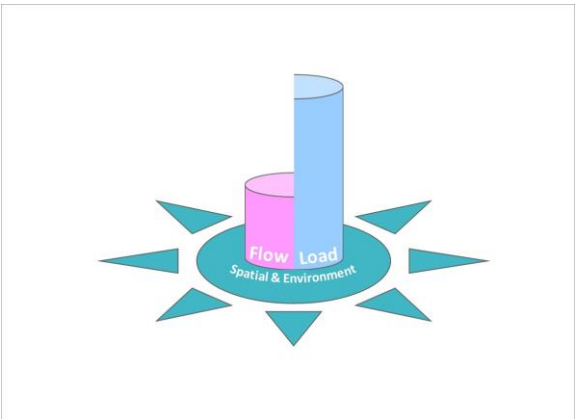


Figure 137 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 138 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 245 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 246 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 247 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 248 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	1	1	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 249 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	✓
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	•
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
KINETON-STW (10430)

March 2023

WONDERFUL ON TAP

Overview

Kineton-Stw WwTW is located to the south west of Kineton and serves a residential population of 2,424. Treated effluent is discharged to the River Dene. It is mainly a gravity system, it also drains the outlying village of Little Kineton to the south (gravity).

Key Statistics:

- Residential Population Served: 2,424
- This is our 234th largest catchment across the whole of Severn Trent, and the 30th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 16.6km of public foul water sewers and 6.6km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

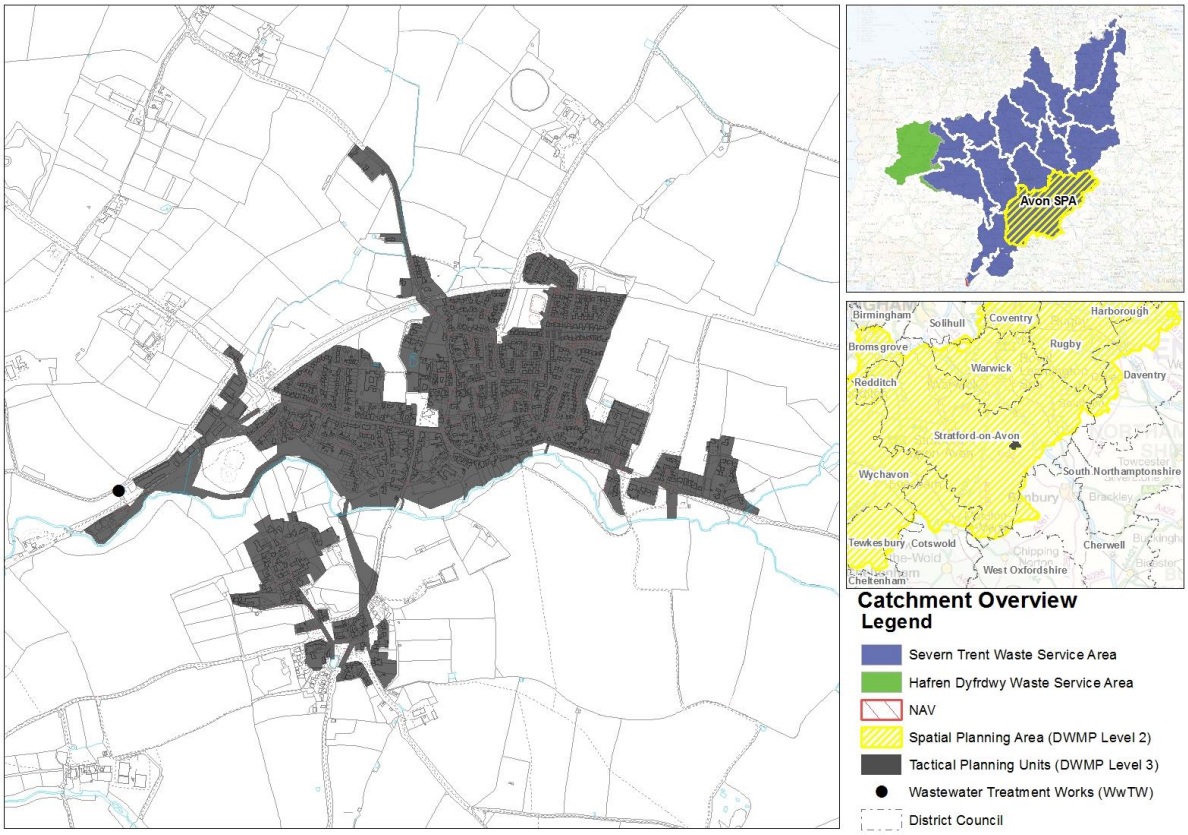
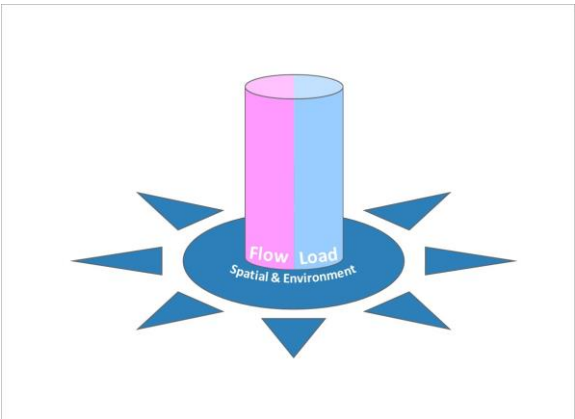


Figure 139 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 140 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 250 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	Yes
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 5 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 251 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 252 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 253 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	1	1	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 254 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: KINGTON (10167)

March 2023

WONDERFUL ON TAP

Overview

Kington WwTW is located to the south west of the village of Kington and serves a residential population of 172. Treated effluent is discharged to the Piddle Brook.

Key Statistics:

- Residential Population Served: 172
- This is our 567th largest catchment across the whole of Severn Trent, and the 113th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has <1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

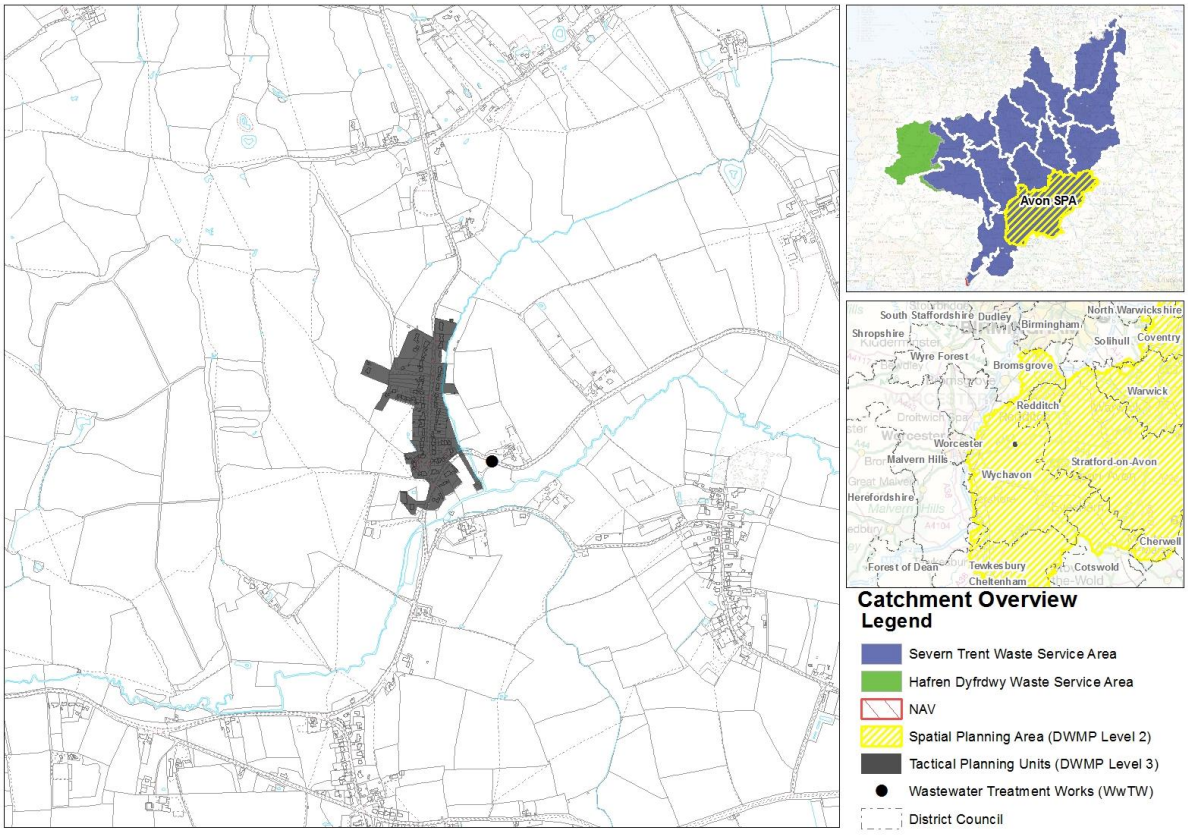
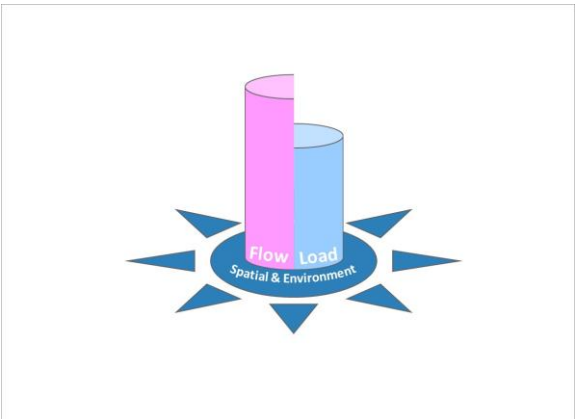


Figure 141 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 142 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 255 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 256 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 257 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 258 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	N/A	N/A	N/A	N/A	N/A	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 259 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓✓✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	•
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: KNIGHTCOTE (10386)

March 2023

WONDERFUL ON TAP

Overview

Knightcote WwTW serves a residential population of 179. Treated effluent is discharged to a tributary of the River Itchen.

Key Statistics:

- Residential Population Served: 179
- This is our 562nd largest catchment across the whole of Severn Trent, and the 111th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 2.8km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

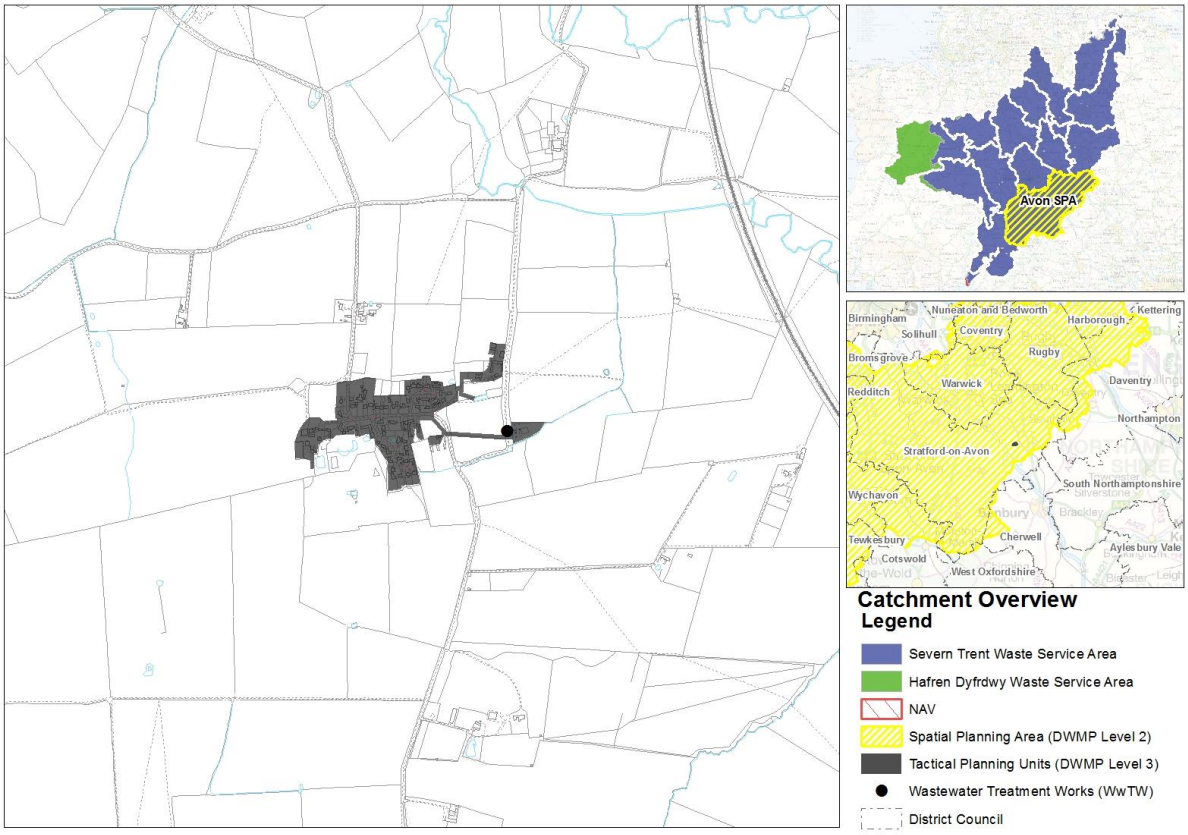
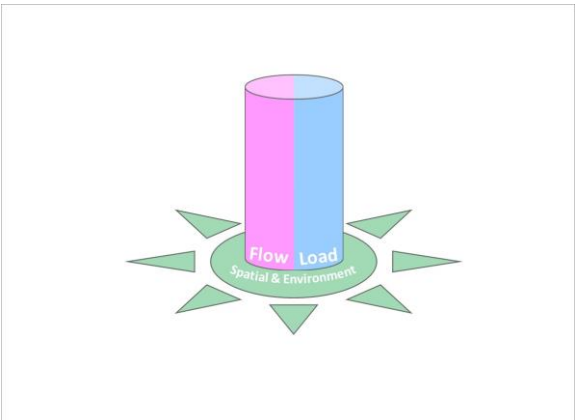


Figure 143 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 144 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 260 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
LAVERTON (10312)

March 2023

WONDERFUL ON TAP

Overview

Laverton WwTW is located to the west of the village of Laverton and serves a residential population of 207. Treated effluent is discharged to the Laverton Brook. In additon to the treating flows from Laverton, the catchment also drains the outlying village of Buckland (pumped).

Key Statistics:

- Residential Population Served: 207
- This is our 539th largest catchment across the whole of Severn Trent, and the 104th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 6.8km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

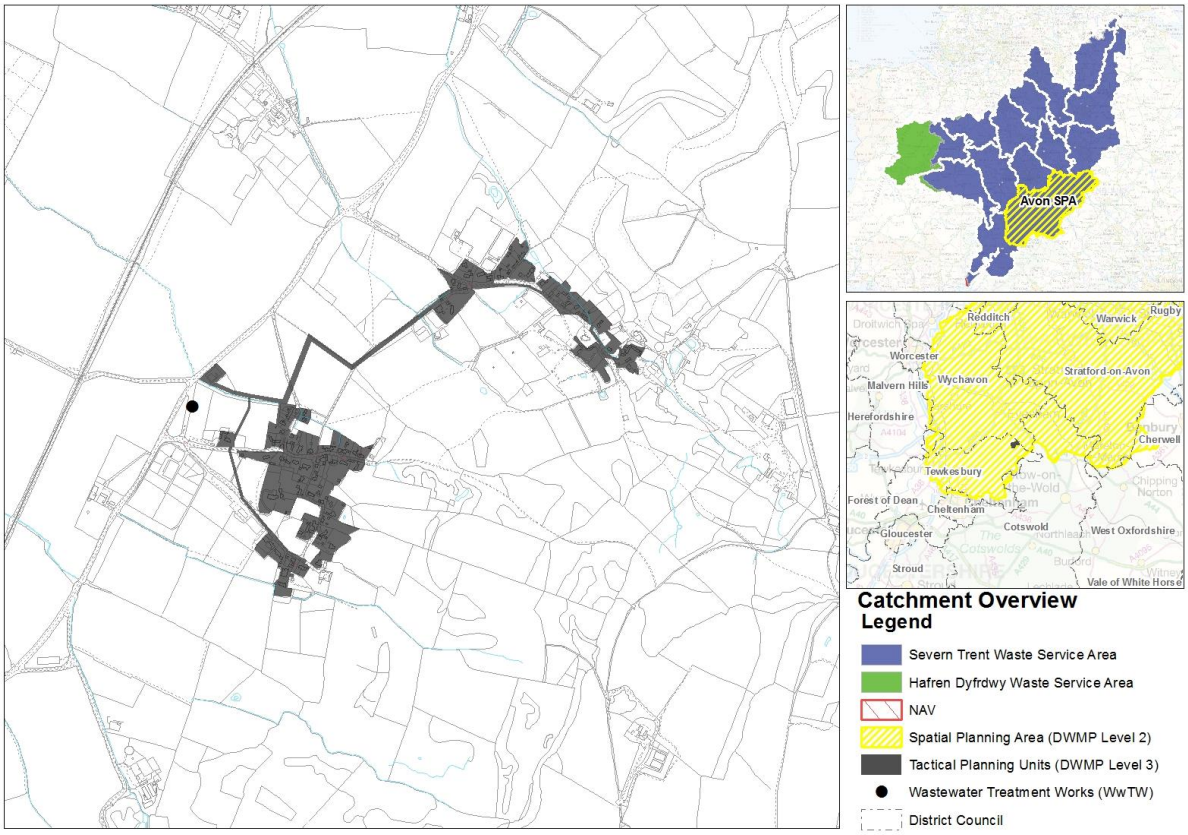
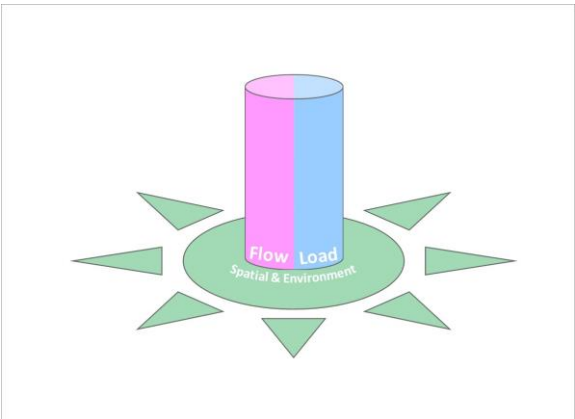


Figure 145 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 146 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 261 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 262 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 263 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 264 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 265 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
LAWFORD HEATH (10424)

March 2023

WONDERFUL ON TAP

Overview

Lawford Heath WwTW serves a residential population of 158. Treated effluent is discharged to a tributary of the Lawford Brook.

Key Statistics:

- Residential Population Served: 158
- This is our 574th largest catchment across the whole of Severn Trent, and the 114th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 3.0km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

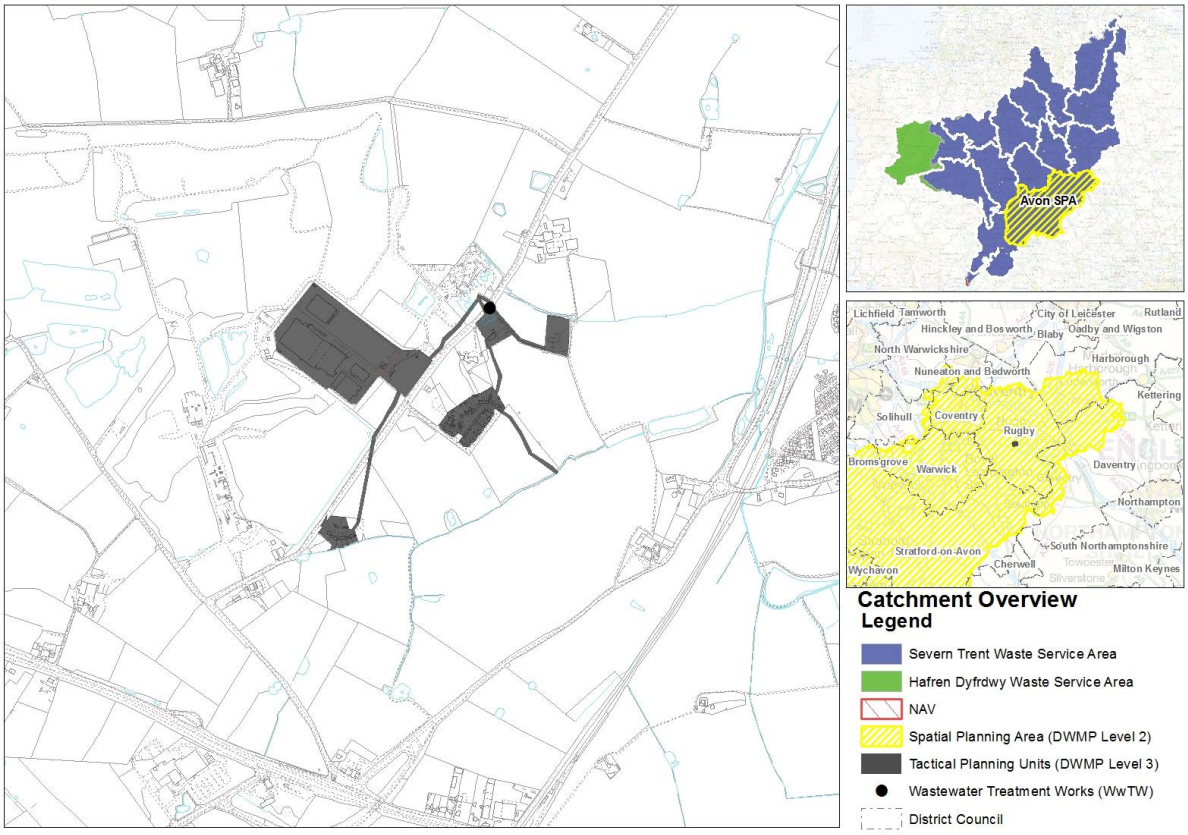
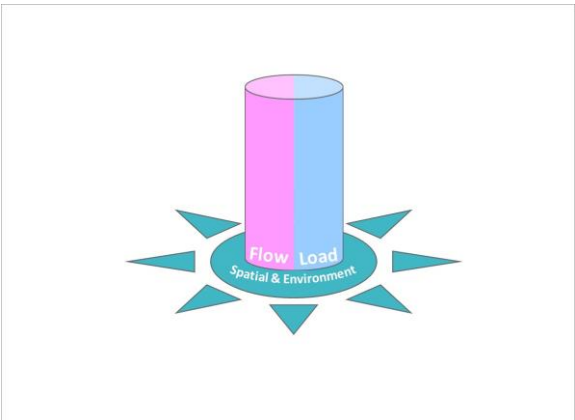


Figure 147 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 148 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 266 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
LEEK WOOTTON (10351)

March 2023

WONDERFUL ON TAP

Overview

Leek Wootton WwTW is located to the East of Leek Wotton and serves a residential population of 833 (gravity). Treated effluent is discharged to a tributary of the River Avon.

Key Statistics:

- Residential Population Served: 833
- This is our 348th largest catchment across the whole of Severn Trent, and the 58th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 9.1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

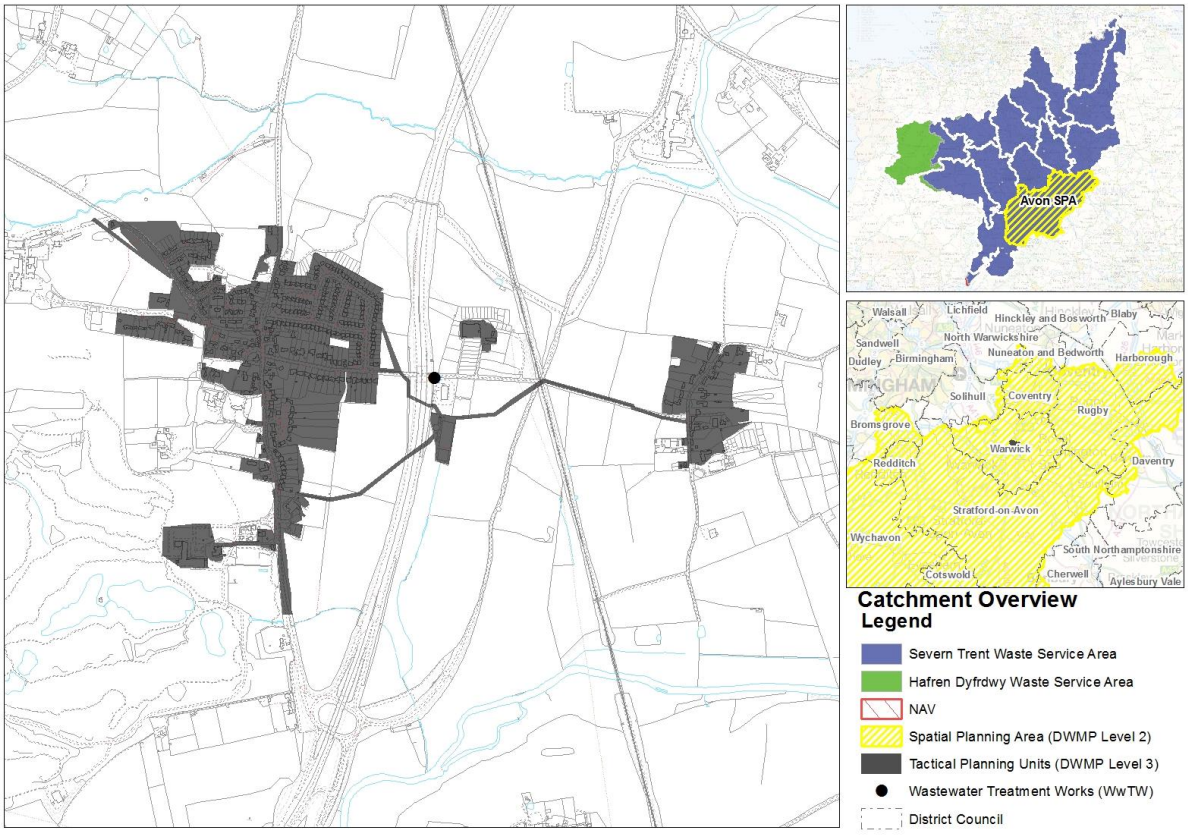
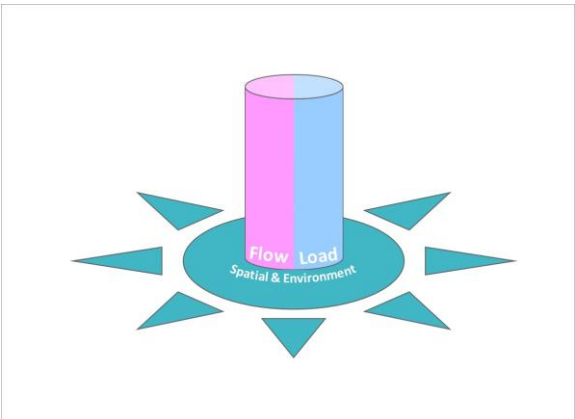


Figure 149 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 150 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 267 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
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16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 268 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 269 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 270 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	N/A	N/A	N/A	N/A	N/A	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 271 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	•
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
LIGHTHORNE HEATH (10389)

March 2023

WONDERFUL ON TAP

Overview

Lighthorne Heath WwTW is located to the north east of Lightthorne Heath and serves a residential population of 773. Treated effluent is discharged to the Tach Brook.

Key Statistics:

- Residential Population Served: 773
- This is our 362nd largest catchment across the whole of Severn Trent, and the 64th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 12.3km of public foul water sewers and 5.3km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

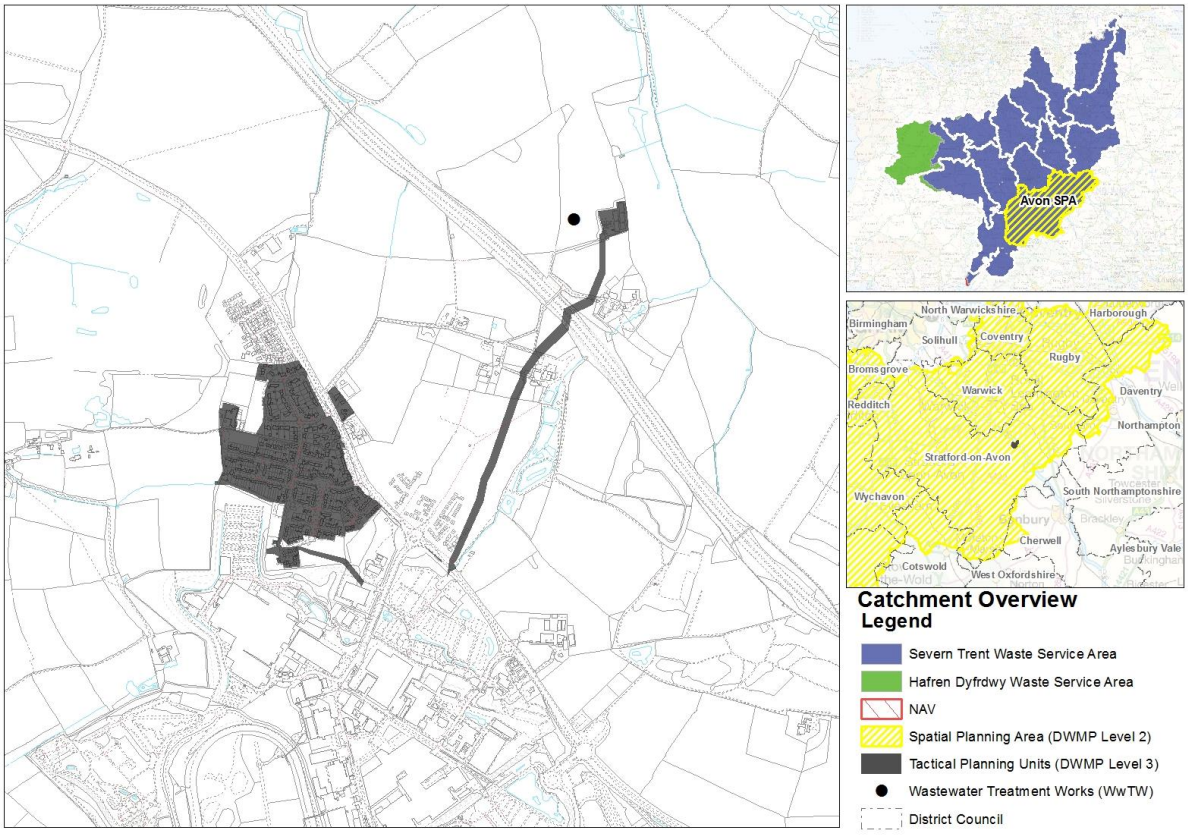
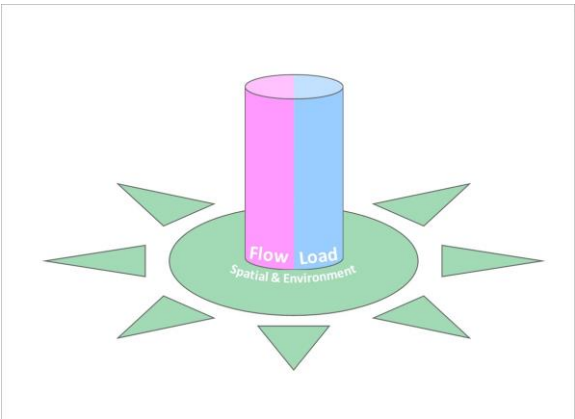


Figure 151 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



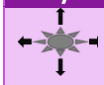
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 152 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 272 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 273 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 274 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 275 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	N/A	N/A	N/A	N/A	N/A	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 276 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
LIGHTHORNE (10388)

March 2023

WONDERFUL ON TAP

Overview

Lighthorne WwTW is located to the north of Lighthorne and serves a residential population of 352. Treated effluent is discharged to a tributary of the Thelsford Brook.

Key Statistics:

- Residential Population Served: 352
- This is our 464th largest catchment across the whole of Severn Trent, and the 91st largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 4.9km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

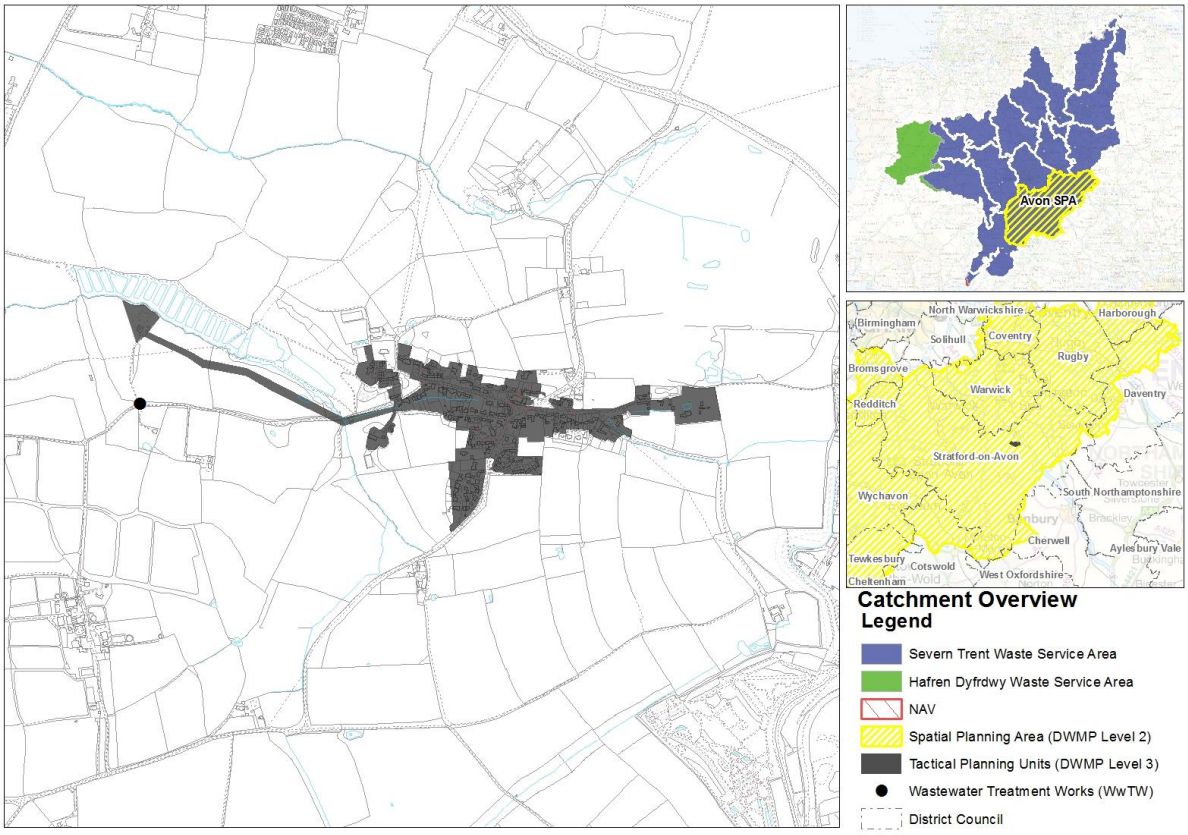
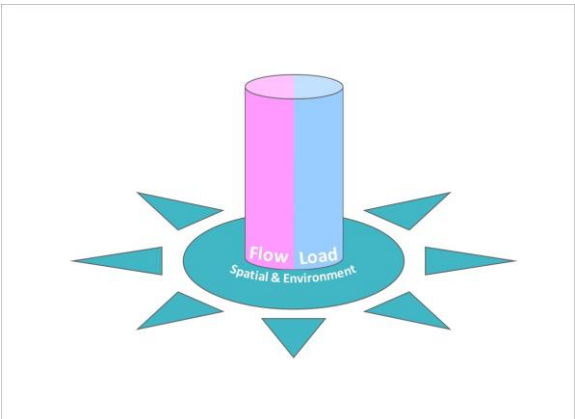


Figure 153 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 154 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 277 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 278 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 279 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 280 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	2	2	2	2	2	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 281 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: LILBOURNE (10387)

March 2023

WONDERFUL ON TAP

Overview

Lilbourne WwTW is located to the north east of Lilbourne and serves a residential population of 373. Treated effluent is discharged to the Yelvertoft Brook.

Key Statistics:

- Residential Population Served: 373
- This is our 456th largest catchment across the whole of Severn Trent, and the 88th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 3.0km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

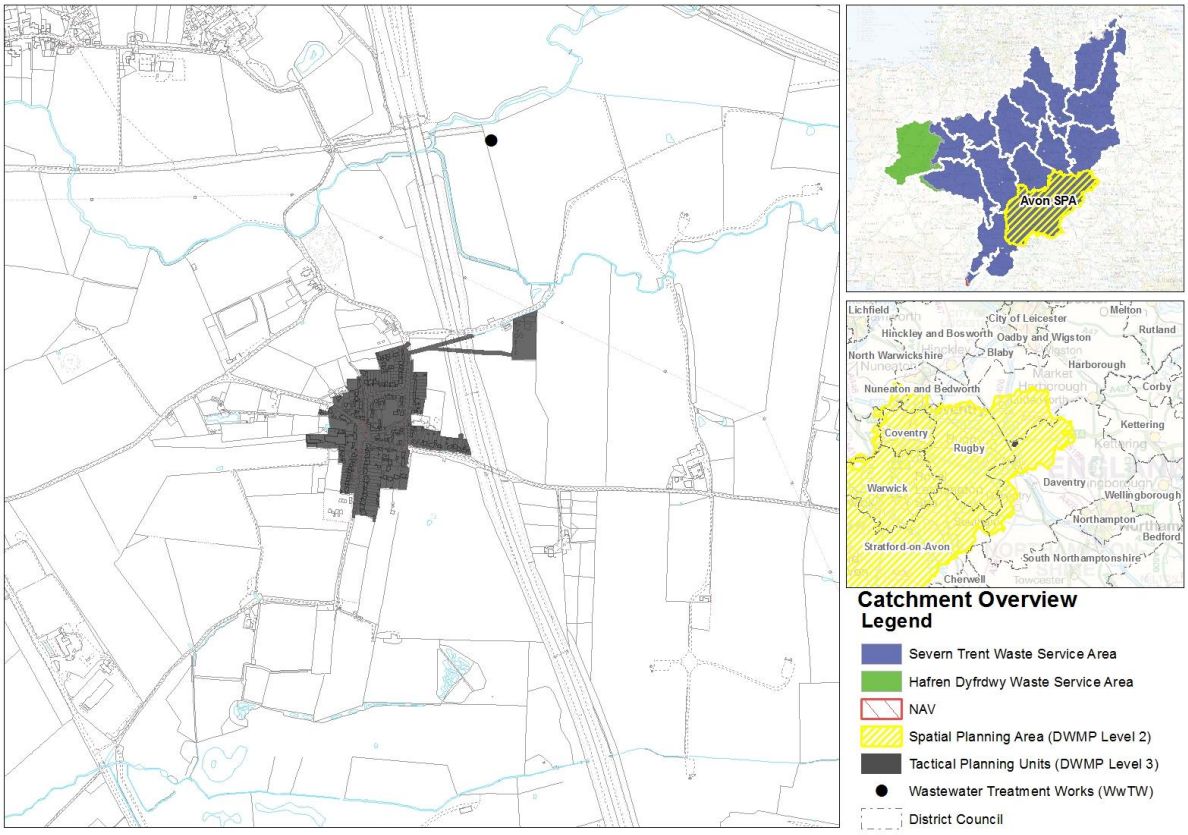
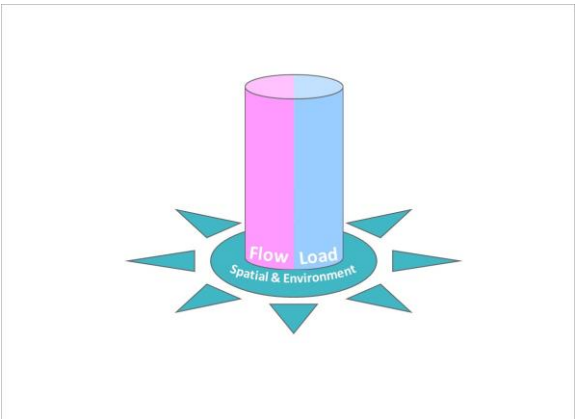


Figure 155 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 156 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 282 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 283 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 284 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 285 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 286 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓✓✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	•
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	•
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
LITTLE COMBERTON WKS (10046)

March 2023

WONDERFUL ON TAP

Overview

Little Comberton Wks WwTW is located to the west of Cropthorne and serves a residential population of 285. Treated effluent is discharged to the Mary Brook. In addition to treating flows from Cropthorne (pumped) it also drains the outlying villages of Little Comberton, Great Comberton, Elmley Castle and Netherton in the south (gravity) and Fladbury and Carlton to the north (pumped).

Key Statistics:

- Residential Population Served: 285
- This is our 491st largest catchment across the whole of Severn Trent, and the 100th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 4.3km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

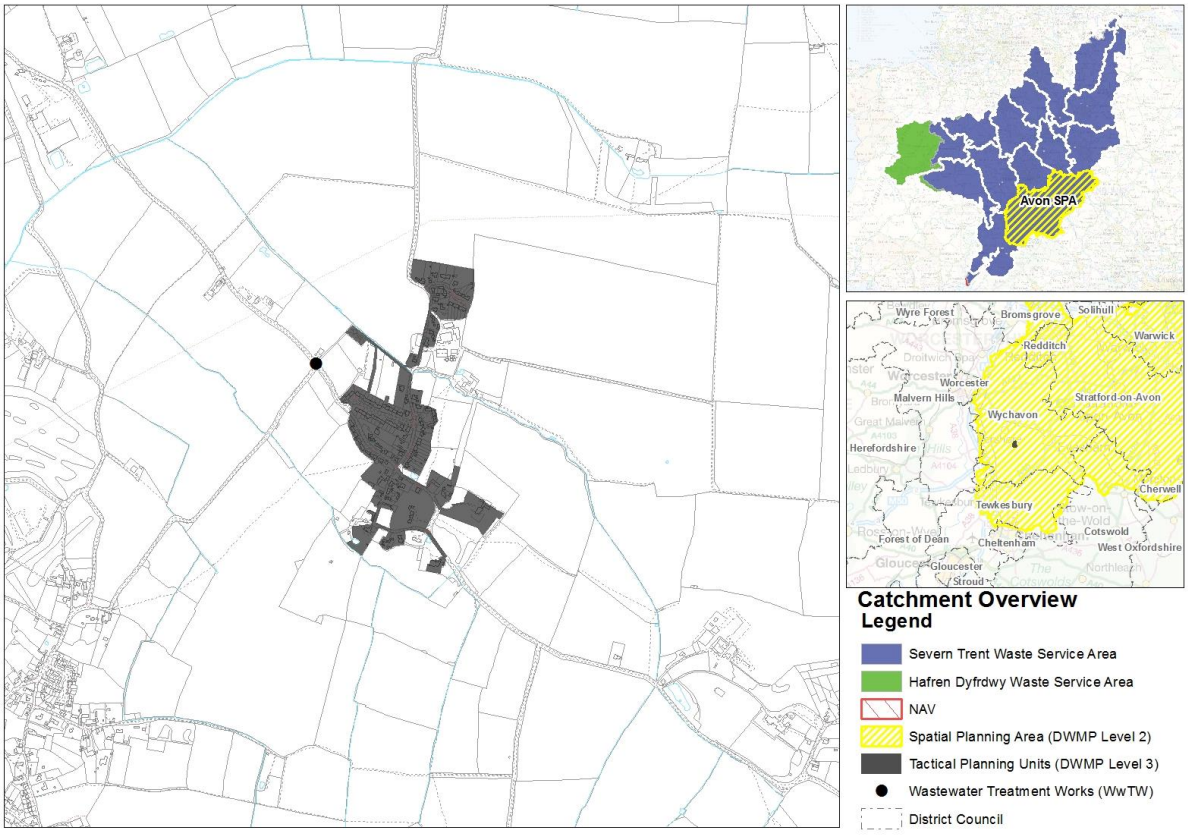
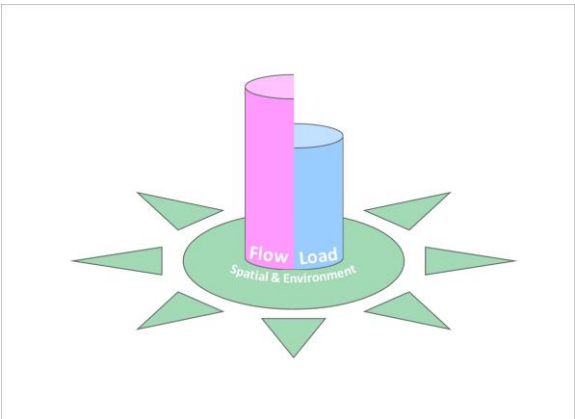


Figure 157 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 158 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 287 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 288 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 289 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 290 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 291 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
LONG COMPTON (10341)

March 2023

WONDERFUL ON TAP

Overview

Long Compton WwTW is located to the North West of Long Compton and serves a residential population of 786. Treated effluent is discharged to the Nethercote Brook.

Key Statistics:

- Residential Population Served: 786
- This is our 359th largest catchment across the whole of Severn Trent, and the 62nd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 10.7km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

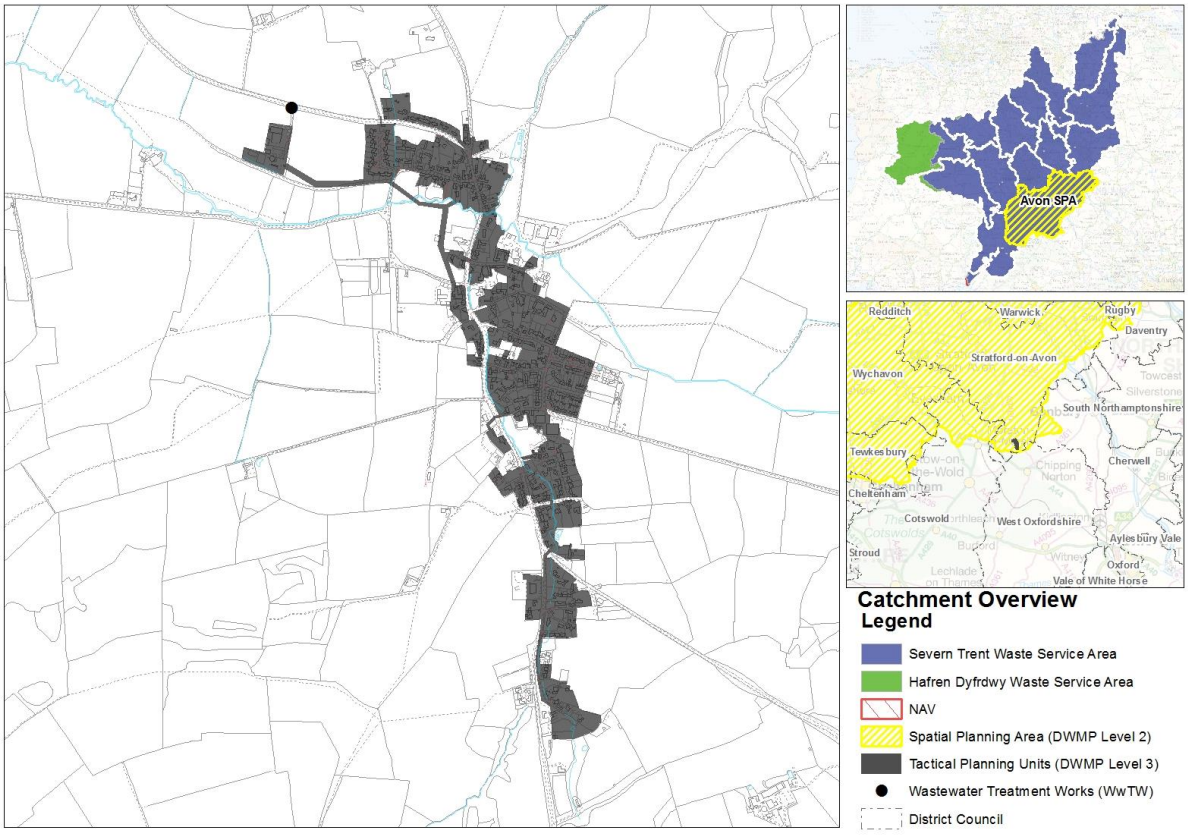
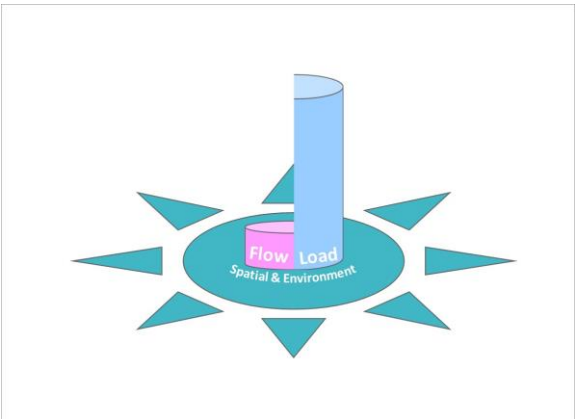


Figure 159 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



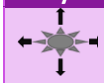
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 160 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 292 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 293 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 294 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 295 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	1	1	1	1	2	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	2	2	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 296 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
LOWER MOOR (10055)

March 2023

WONDERFUL ON TAP

SEVERN
TRENT

Overview

Lower Moor WwTW is located to the south of Lower Moor and serves a residential population of 688. Treated effluent is discharged to a tributary of the River Avon.

Key Statistics:

- Residential Population Served: 688
- This is our 378th largest catchment across the whole of Severn Trent, and the 69th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 6.4km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

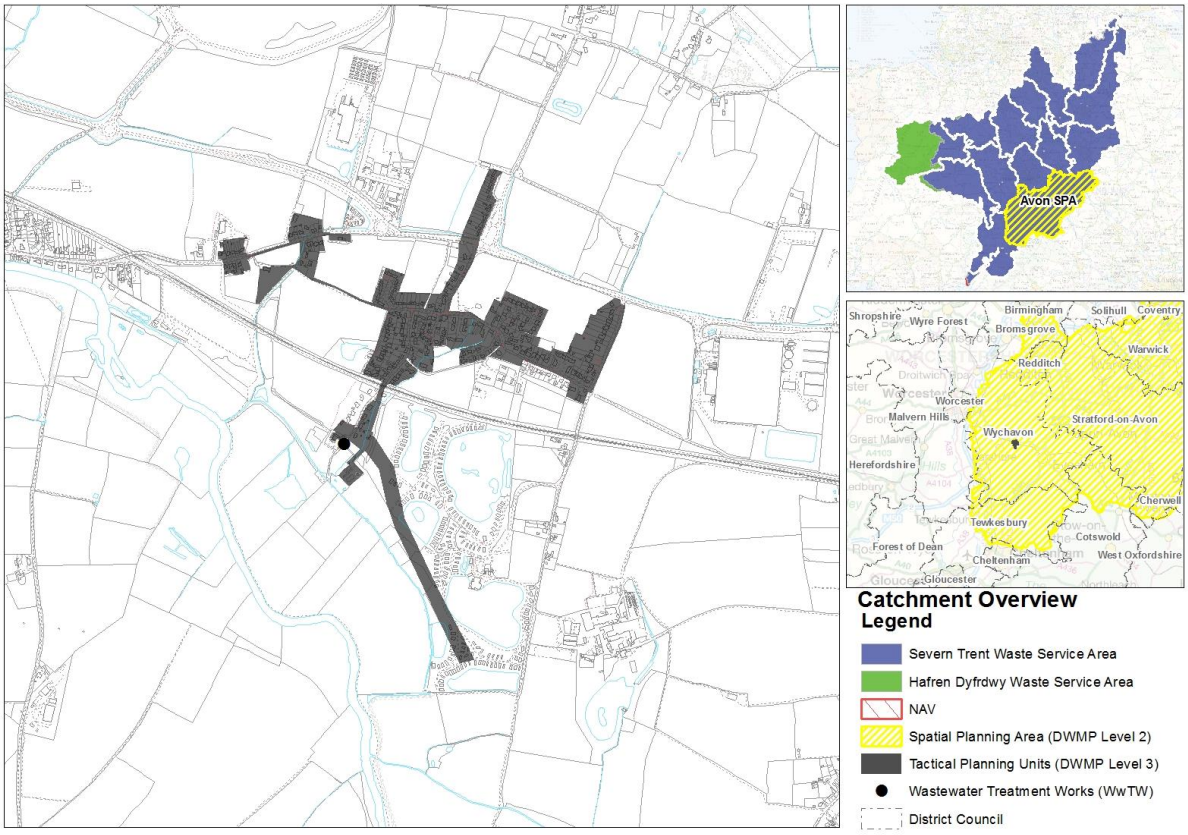
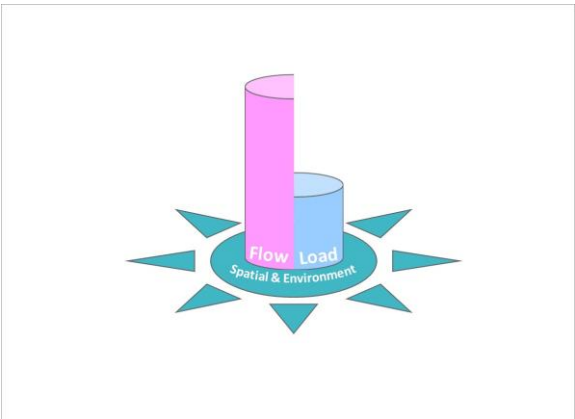


Figure 161 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



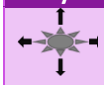
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 162 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 297 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 298 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 299 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 300 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	2	2	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 301 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
LOWER SHUCKBURGH (10426)

March 2023

WONDERFUL ON TAP

SEVERN
TRENT

Overview

Lower Shuckburgh WwTW serves a residential population of 65. Treated effluent is discharged to a tributary of the River Leam.

Key Statistics:

- Residential Population Served: 65
- This is our 685th largest catchment across the whole of Severn Trent, and the 136th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 2.1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

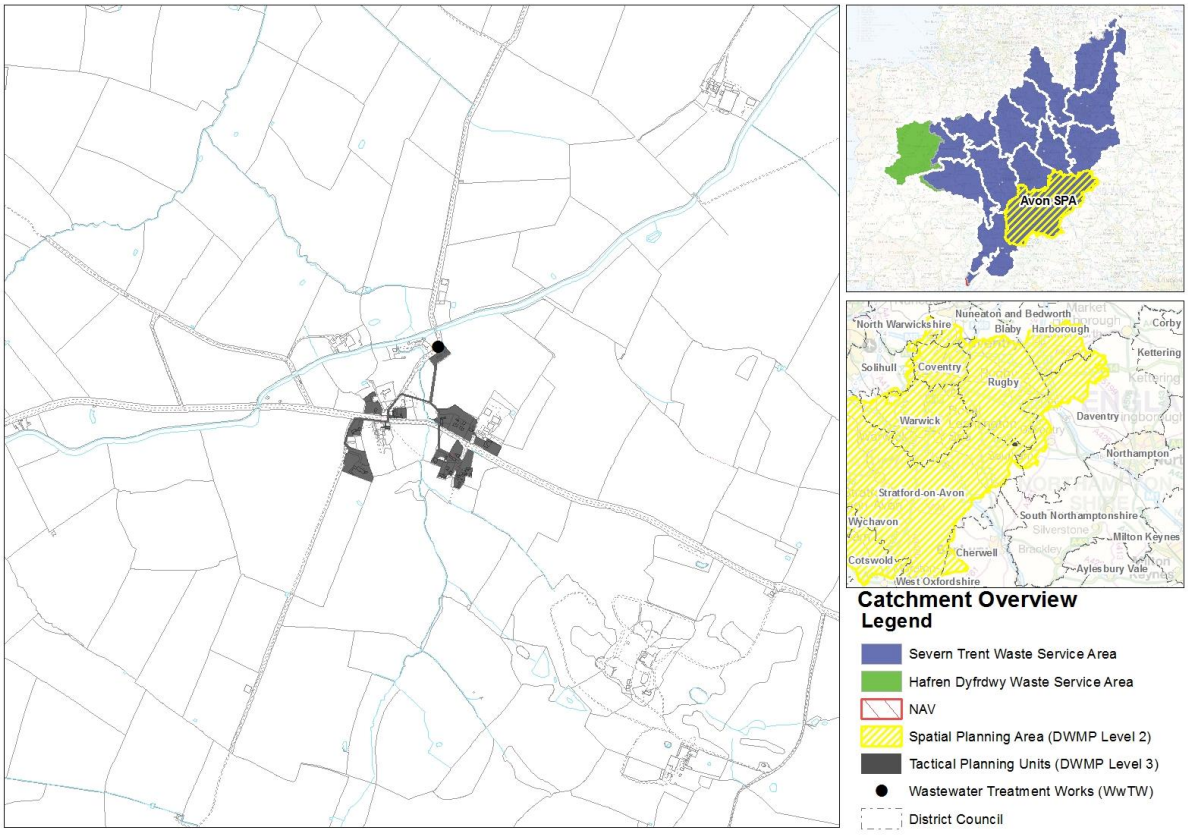
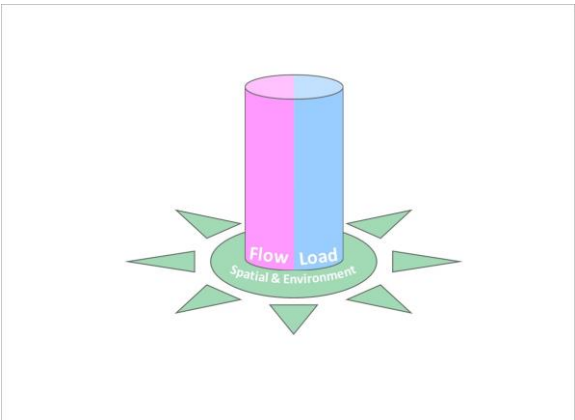


Figure 163 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 164 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 302 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Whilst the catchment triggered through the RBCS assessment, a pre-BRAVA review of the catchment indicated that the triggers were miss-representative of the long-term catchment risk. A decision was subsequently taken to downgrade the RBCS risk, resulting in the catchment not progressing any further along the DWMP process.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

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Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
LOWER STRENSHAM (BAUGHTON LANE) (18005)

March 2023

WONDERFUL ON TAP

Overview

Lower Strensham (Baughton Lane) WwTW serves a residential population of 17. Treated effluent is discharged to a tributary of the River Avon.

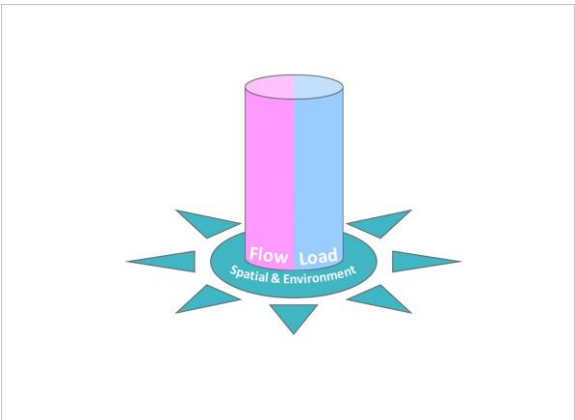
Key Statistics:

- Residential Population Served: 17
- This is our 825th largest catchment across the whole of Severn Trent, and the 148th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has <1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

Figure 165 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 166 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 303 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
LOWER STRENSHAM (10052)

March 2023

WONDERFUL ON TAP

Overview

Lower Strensham WwTW is located to the north east of Strensham and serves a residential population of 207. Treated effluent is discharged locally. Flows arrive by gravity.

Key Statistics:

- Residential Population Served: 207
- This is our 539th largest catchment across the whole of Severn Trent, and the 104th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 7.1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

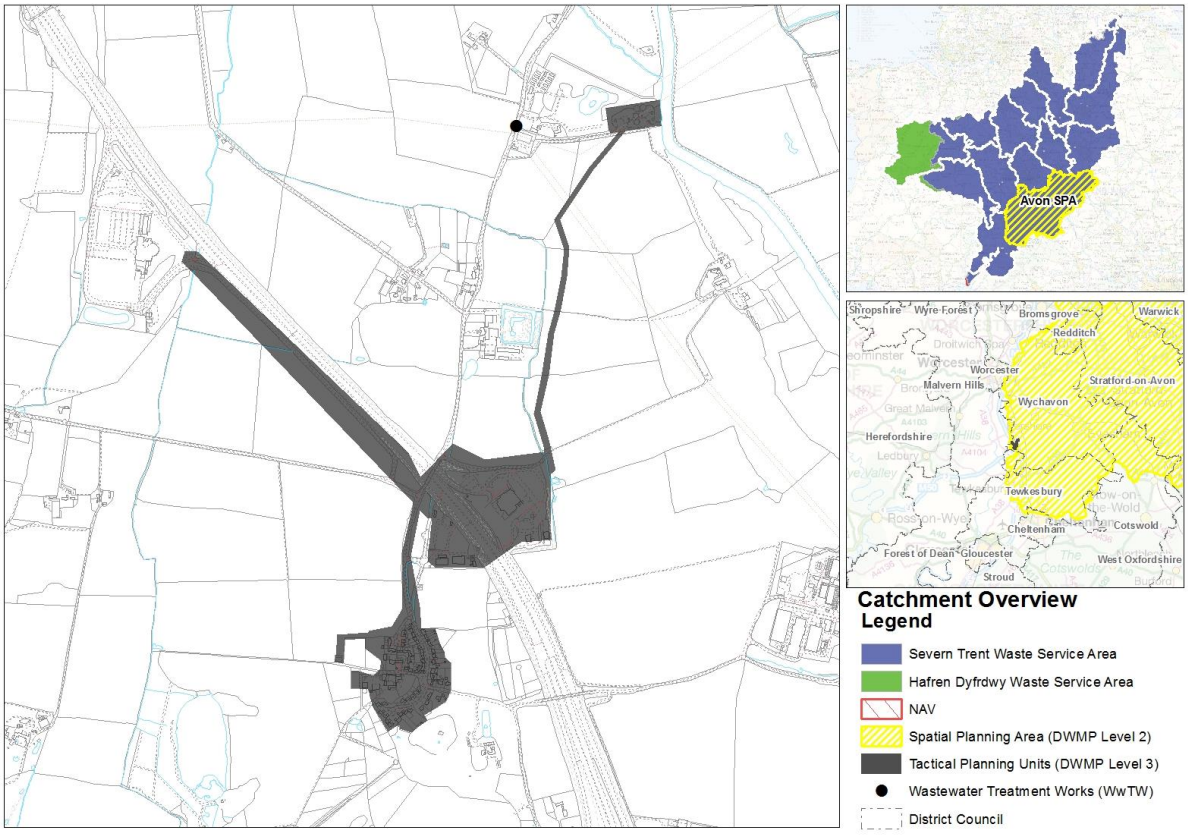
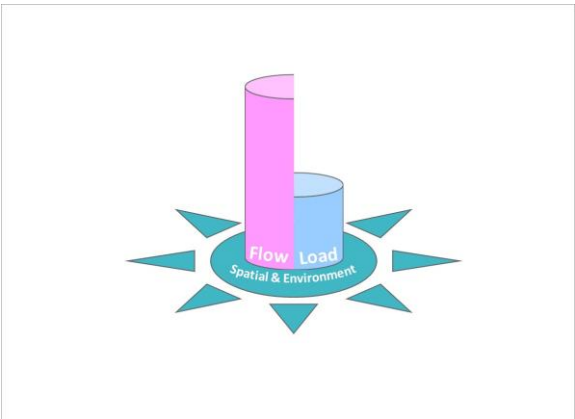


Figure 167 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 168 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 304 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 305 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 306 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 307 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	1	1	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 308 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
LUTTERWORTH (11232)

March 2023

WONDERFUL ON TAP

Overview

Lutterworth WwTW is located to the south of Lutterworth and serves a residential population of 11,495. Treated effluent is discharged to the River Swift. In addition to treating flows from Lutterworth, the catchment also drains the outlying villages of Walcote to the east (pumped) and Cotesbach to the south (gravity).

Key Statistics:

- Residential Population Served: 11,495
- This is our 111th largest catchment across the whole of Severn Trent, and the 13th largest in the Avon Stategic Planning Area making up 1% of its population.
- It has 91.5km of public foul water sewers and 31.9km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

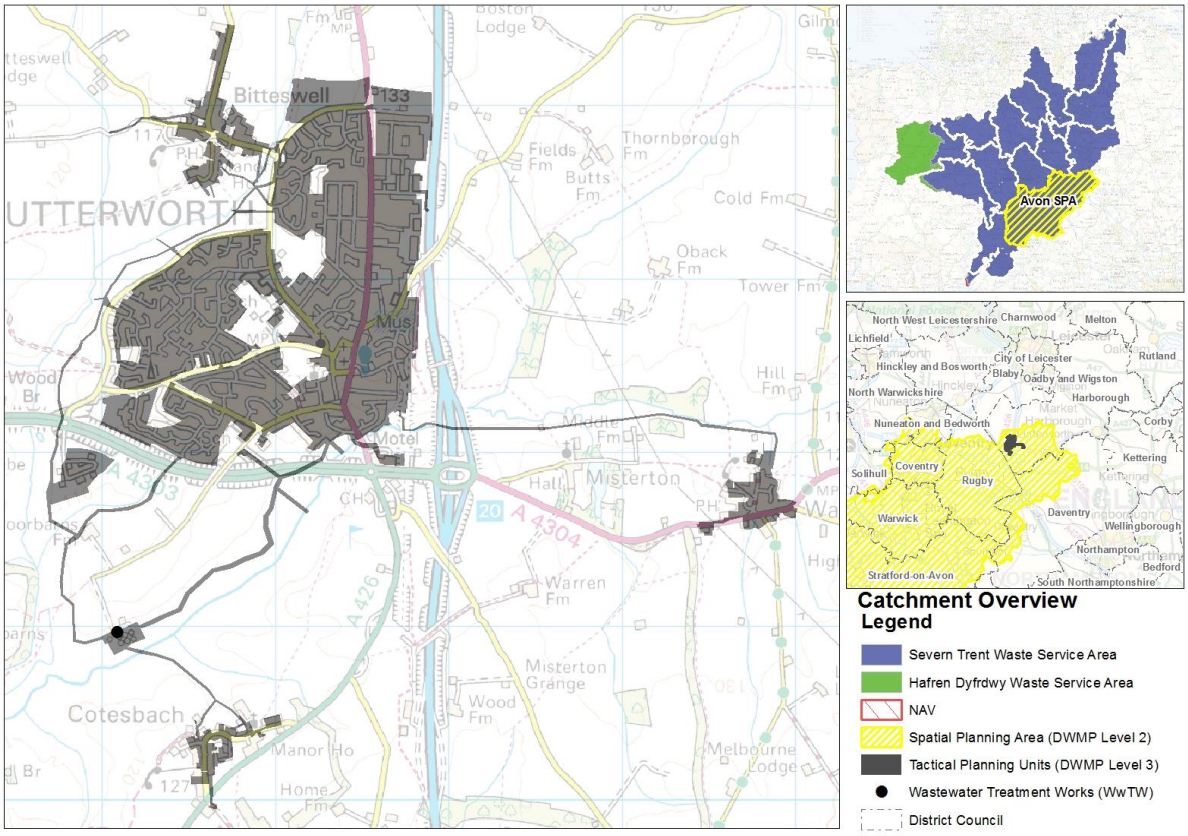
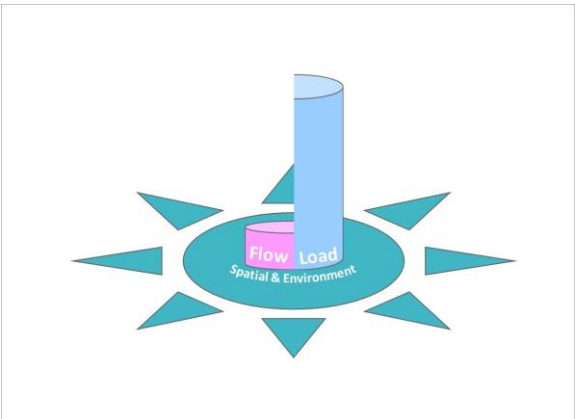


Figure 169 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 170 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 309 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	Yes
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	Yes
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 7 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 310 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 311 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 312 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	1	1	1	1	2	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 313 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	✓
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	•
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
MONKS KIRBY (10466)

March 2023

WONDERFUL ON TAP

Overview

Monks Kirby WwTW is located to the south east of Monks Kirby and serves a residential population of 1,108. Treated effluent is discharged to the Smite Brook. In addition to treating flows from Monks Kirby (gravity) it also drains the outlying villages of Withybrook and to the north (pumped), Pailton to the east (pumped) and Stretton-under-Fosse to the south (pumped)

Key Statistics:

- Residential Population Served: 1,108
- This is our 314th largest catchment across the whole of Severn Trent, and the 46th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 27.9km of public foul water sewers and 4.0km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

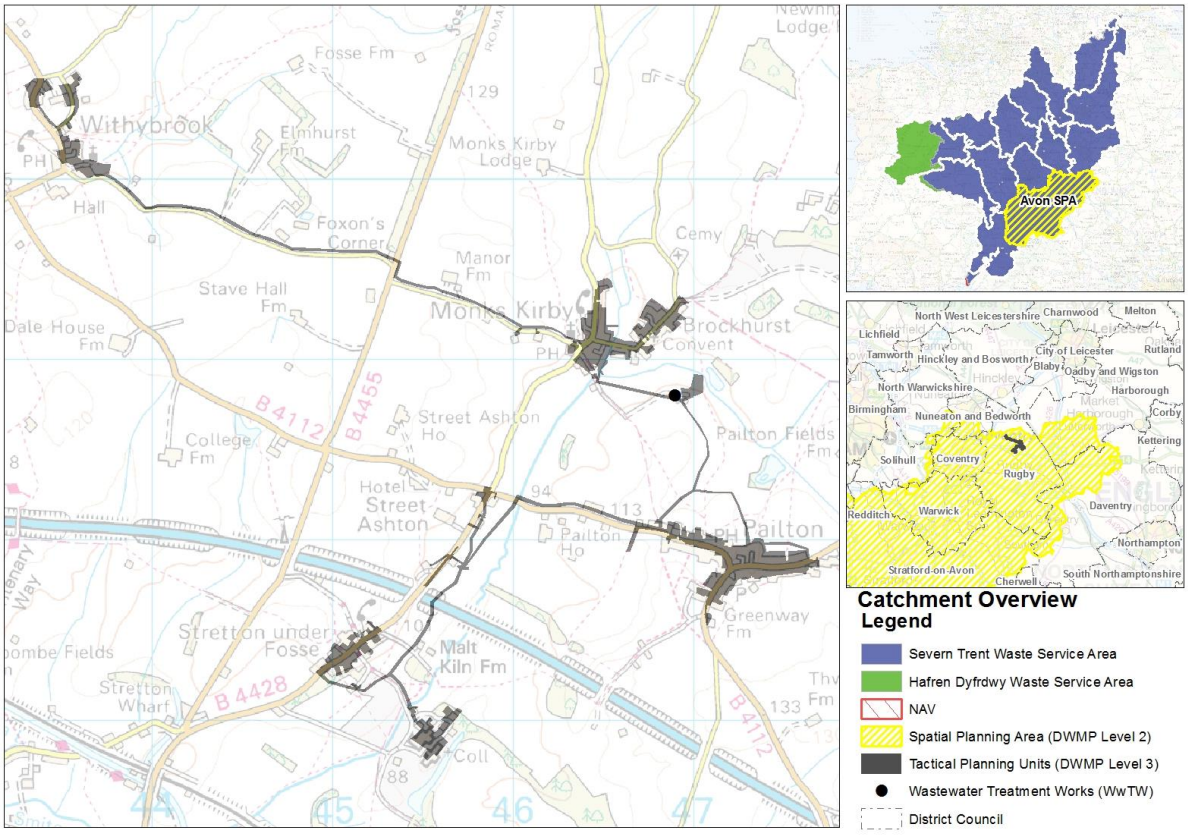
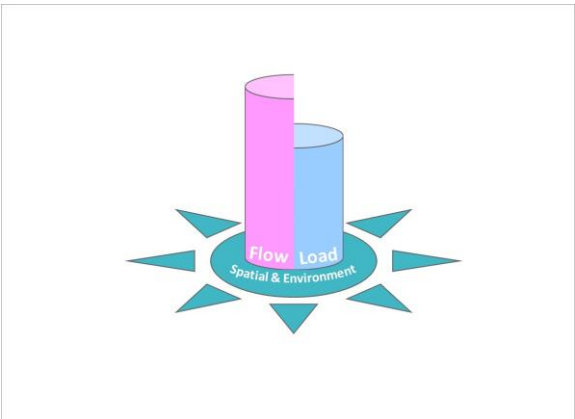


Figure 171 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



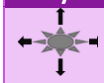
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 172 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 314 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 315 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 316 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 317 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	2	2	2	2	2	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 318 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	•
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
MORETON MORRELL (10390)

March 2023

WONDERFUL ON TAP

Overview

Moreton Morrell WwTW is located to the west of Moreton Morrell and serves a residential population of 441. Treated effluent is discharged to a tributary of the Charlecote Brook.

Key Statistics:

- Residential Population Served: 441
- This is our 443rd largest catchment across the whole of Severn Trent, and the 82nd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 6.2km of public foul water sewers and 1.1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

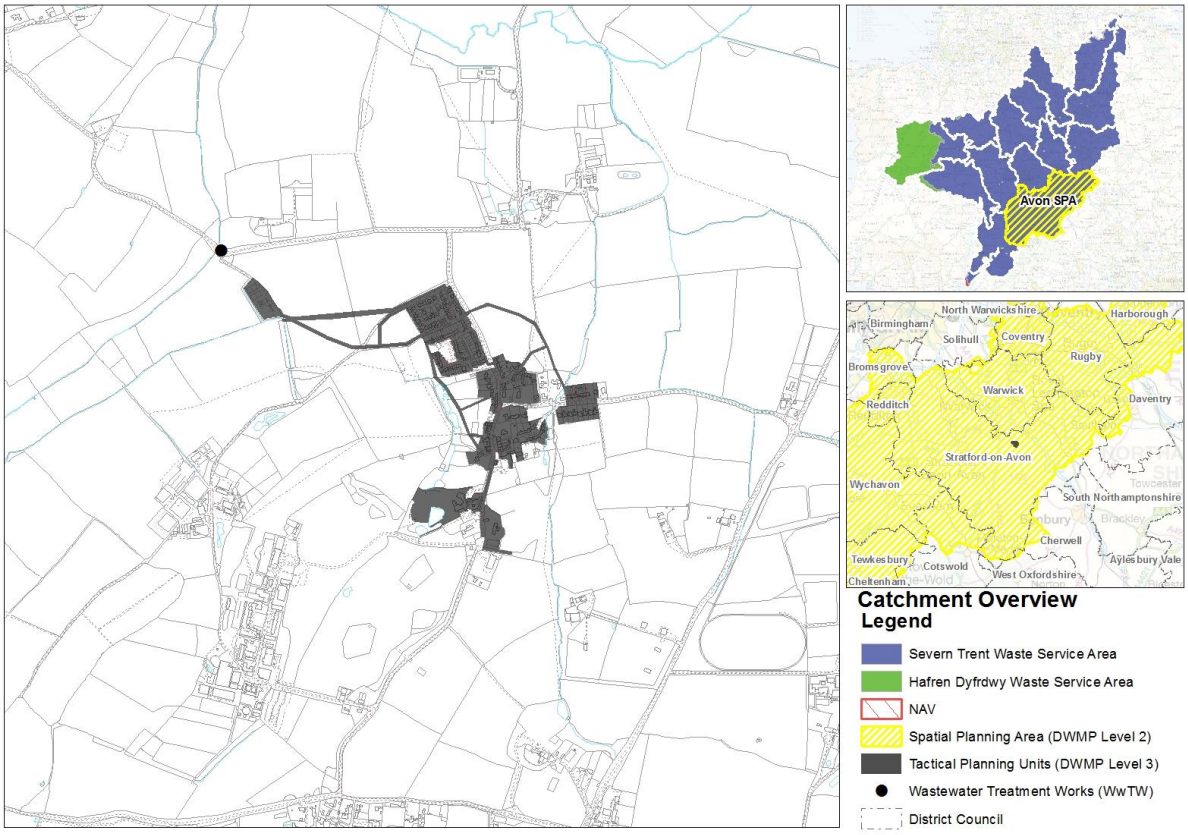
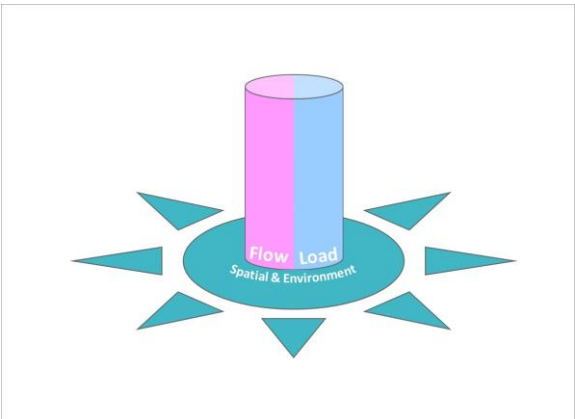


Figure 173 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 174 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 319 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 320 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 321 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 322 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 323 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
MORETON PADDOX (10391)

March 2023

WONDERFUL ON TAP

Overview

Moreton Paddox WwTW is located to the south of Moreton Paddox and serves a residential population of 158. Treated effluent is discharged to a tributary of the Charlecote Brook.

Key Statistics:

- Residential Population Served: 158
- This is our 574th largest catchment across the whole of Severn Trent, and the 114th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 4.1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

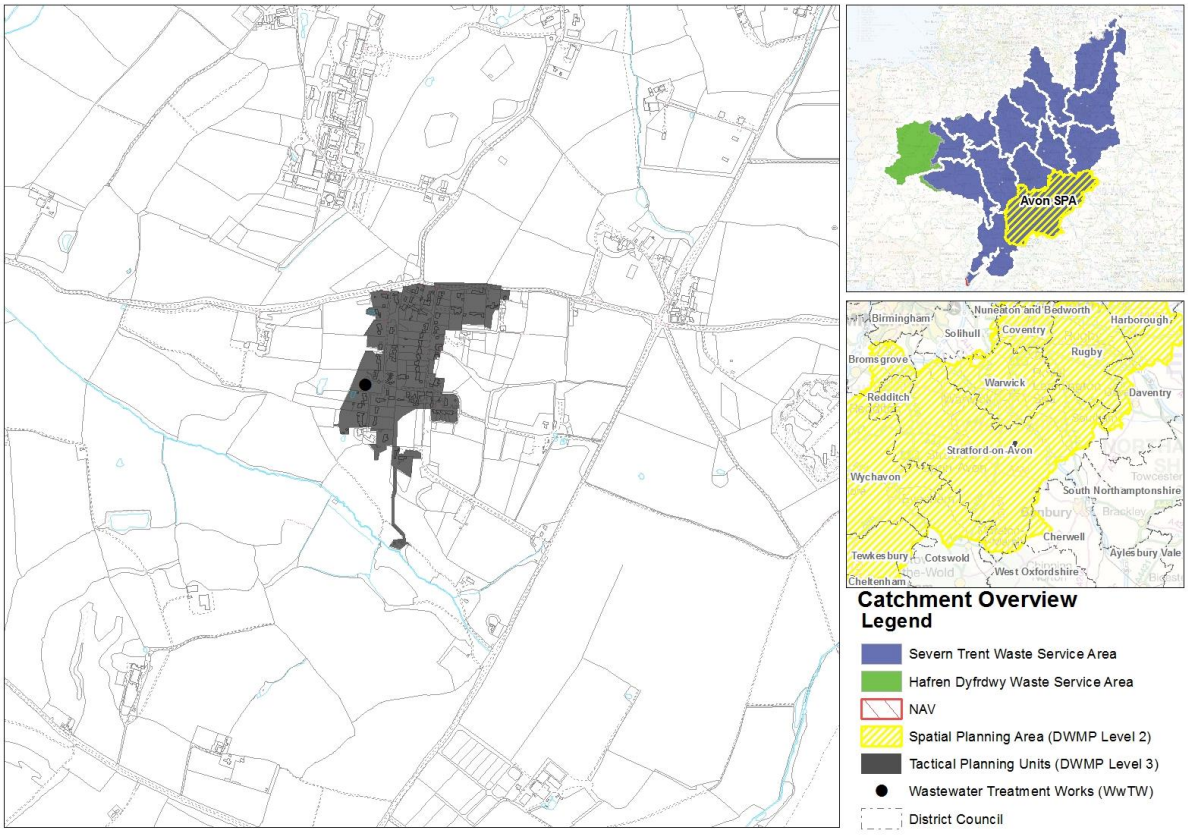
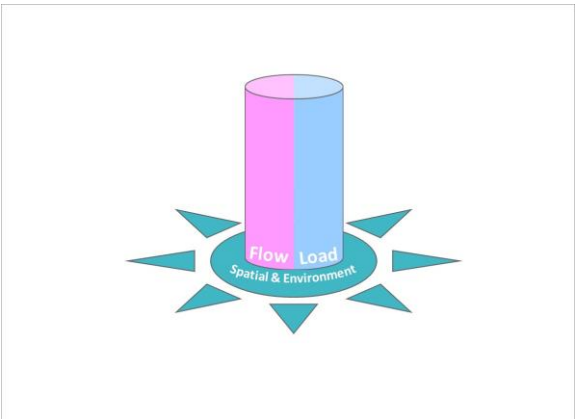


Figure 175 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



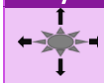
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 176 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 324 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 325 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 326 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
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Table 327 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 328 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
NAPTON WRW (10393)

March 2023

WONDERFUL ON TAP

SEVERN TRENT

Overview

Napton Wrw WwTW is located to the south west of Napton and serves a residential population of 872. Treated effluent is discharged to the River Stowe.

Key Statistics:

- Residential Population Served: 872
- This is our 343rd largest catchment across the whole of Severn Trent, and the 56th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 13.4km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

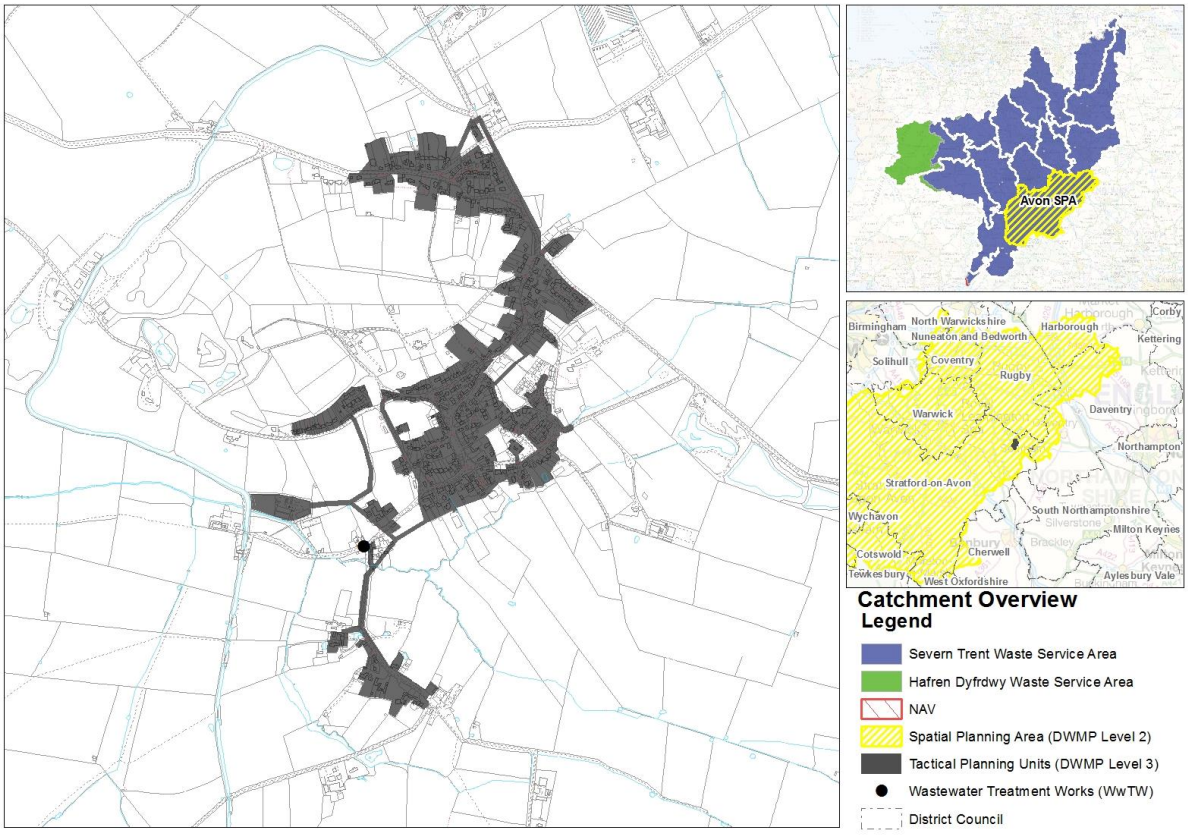
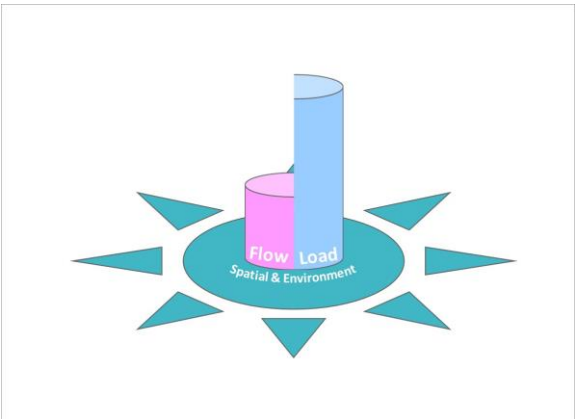


Figure 177 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



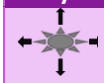
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 178 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 329 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 330 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 331 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 332 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	1	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	1	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	2	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 333 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	•
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
NASEBY WRW (10392)

March 2023

WONDERFUL ON TAP

Overview

Naseby Wrw WwTW is located to the west of Naesby and serves a residential population of 682. Treated effluent is discharged to the River Avon.

Key Statistics:

- Residential Population Served: 682
- This is our 380th largest catchment across the whole of Severn Trent, and the 70th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 7.3km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

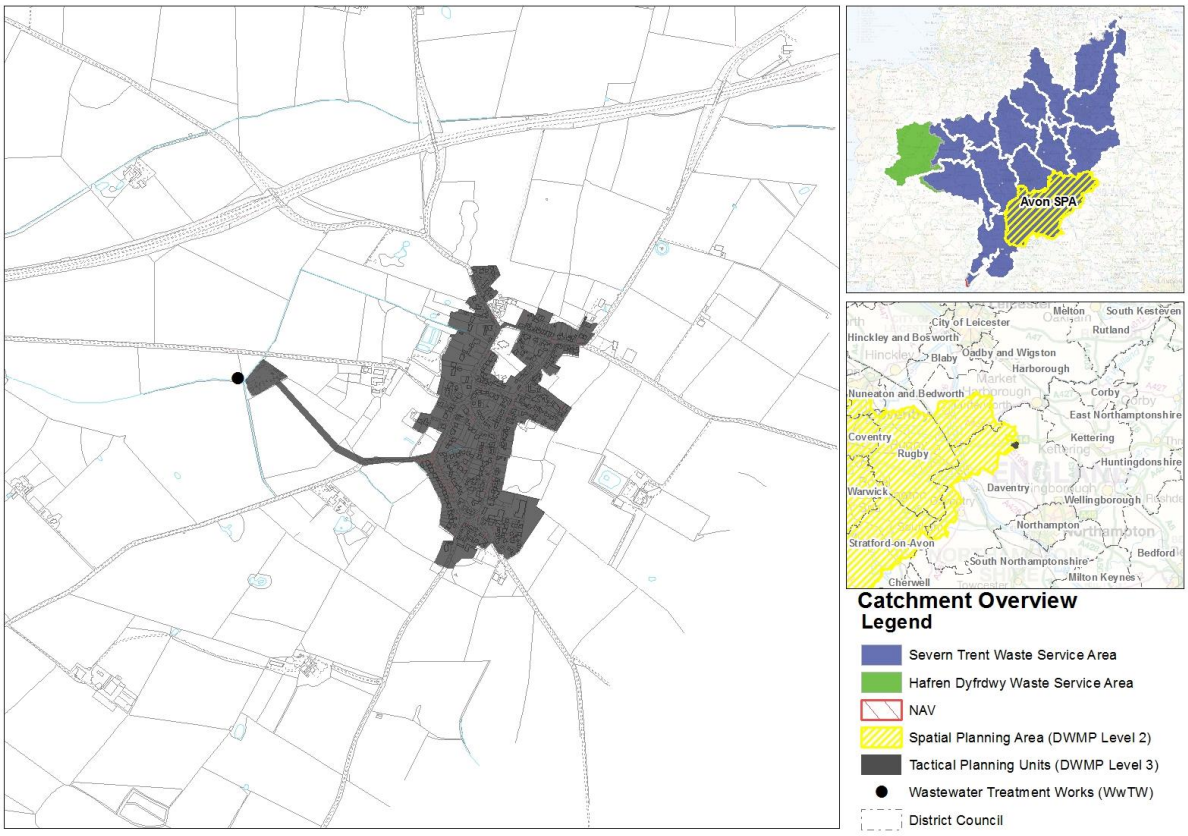
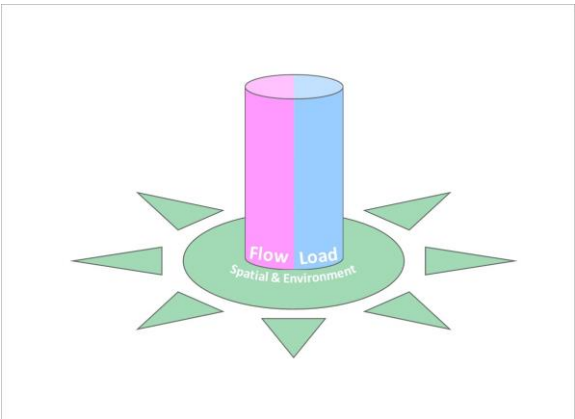


Figure 179 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 180 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 334 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 335 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 336 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 337 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 338 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	•
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
NAUNTON BEAUCHAMP (10020)

March 2023

WONDERFUL ON TAP

Overview

Naunton Beauchamp WwTW serves a residential population of 61. Treated effluent is discharged to a tributary of the Piddle Brook.

Key Statistics:

- Residential Population Served: 61
- This is our 700th largest catchment across the whole of Severn Trent, and the 139th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 1.5km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

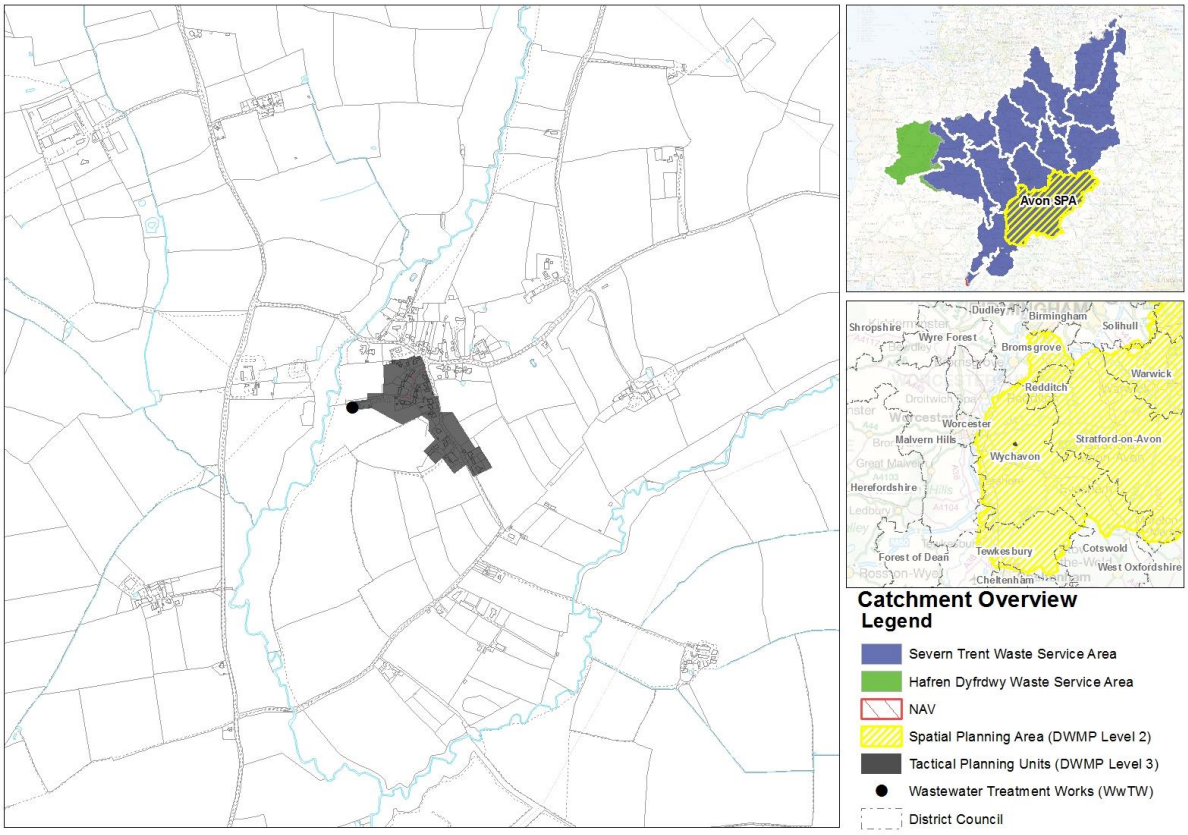
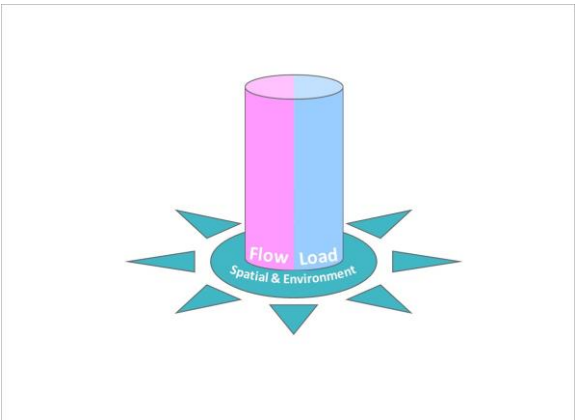


Figure 181 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 182 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 339 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
NETHERCOTE (10343)

March 2023

WONDERFUL ON TAP

Overview

Nethercote WwTW is located to the east of Great Wolford and serves a residential population of 555. Treated effluent is discharged to the Nethercote Brook. As well as treating flows from Great Wolford, it also drains the villages of Todenham and Little Wolford from the north (pumped) and from the south Barton on the Heath (pumped).

Key Statistics:

- Residential Population Served: 555
- This is our 415th largest catchment across the whole of Severn Trent, and the 77th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 30.4km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

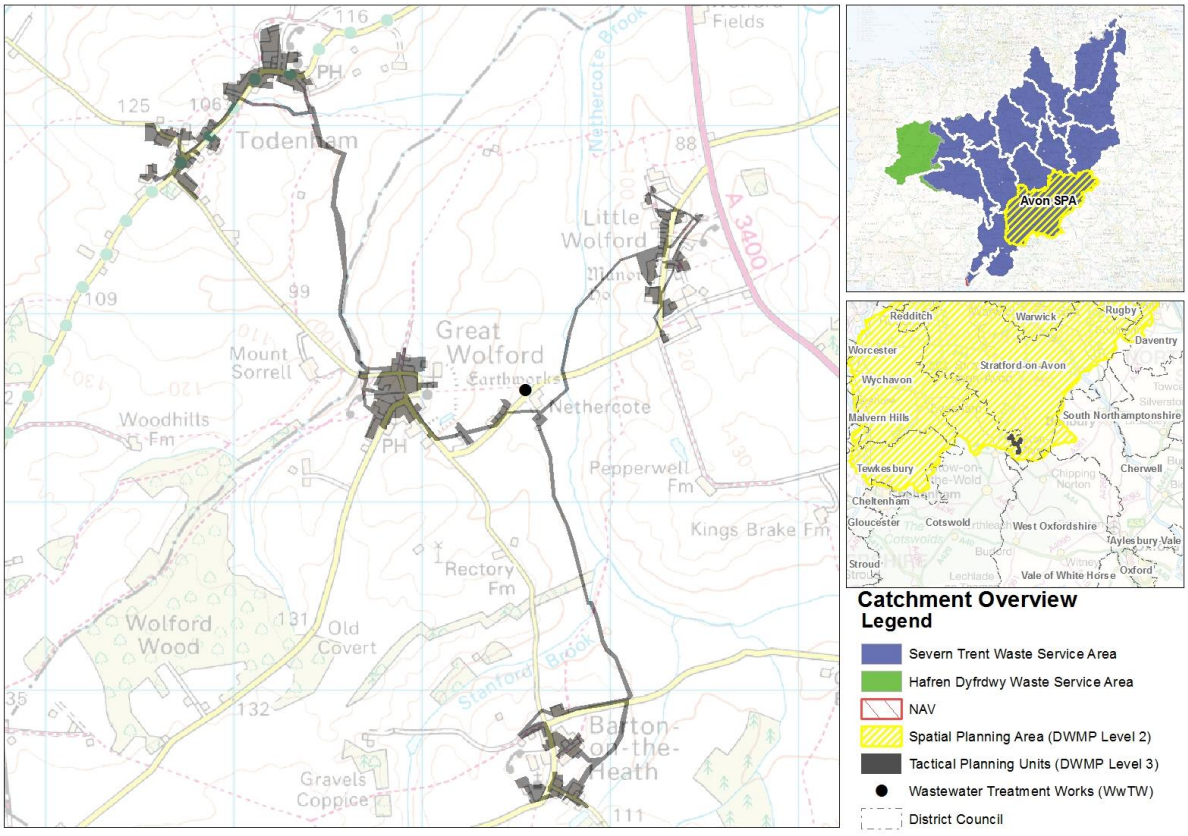
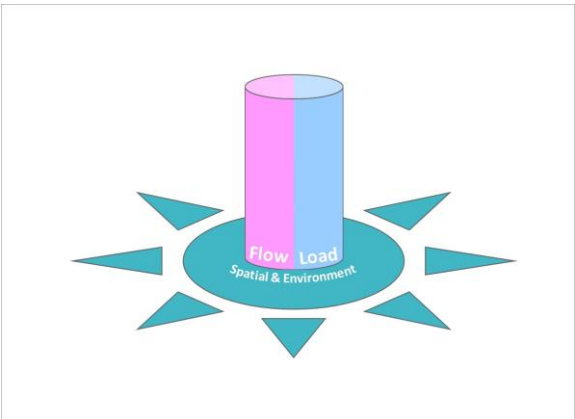


Figure 183 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 184 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 340 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 341 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 342 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 343 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	1	1	1	1	1	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	N/A	N/A	N/A	N/A	N/A	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 344 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: NORTHEND (10394)

March 2023

WONDERFUL ON TAP

Overview

Northend WwTW is located to the north west of Northend and serves a residential population of 345. Treated effluent is discharged to a tributary of the River Dene.

Key Statistics:

- Residential Population Served: 345
- This is our 467th largest catchment across the whole of Severn Trent, and the 92nd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 4.4km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

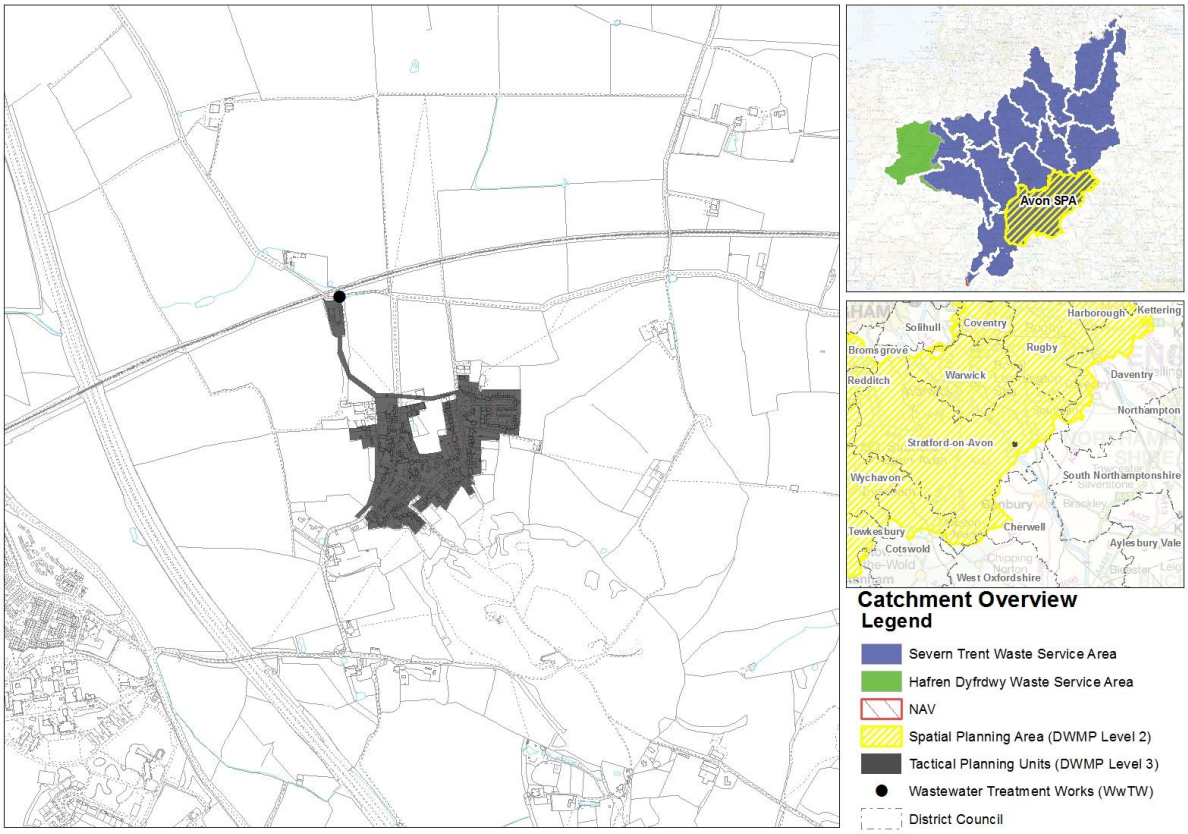
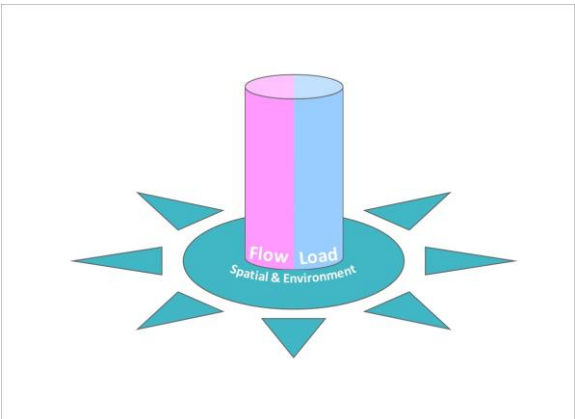


Figure 185 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 186 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 345 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 346 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 347 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 348 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	2	2	2	2	2	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 349 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
NORTON LINDSEY (10342)

March 2023

WONDERFUL ON TAP

Overview

Norton Lindsey WwTW is located to the south of Norton Lindsay and serves a residential population of 558. Treated effluent is discharged to a tributary of the Sherbourne Brook. In addition to treating flows from Norton Lindsay (gravity) it also drains the outlying village of Wolverton to the west (pumped).

Key Statistics:

- Residential Population Served: 558
- This is our 413th largest catchment across the whole of Severn Trent, and the 75th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 14.7km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

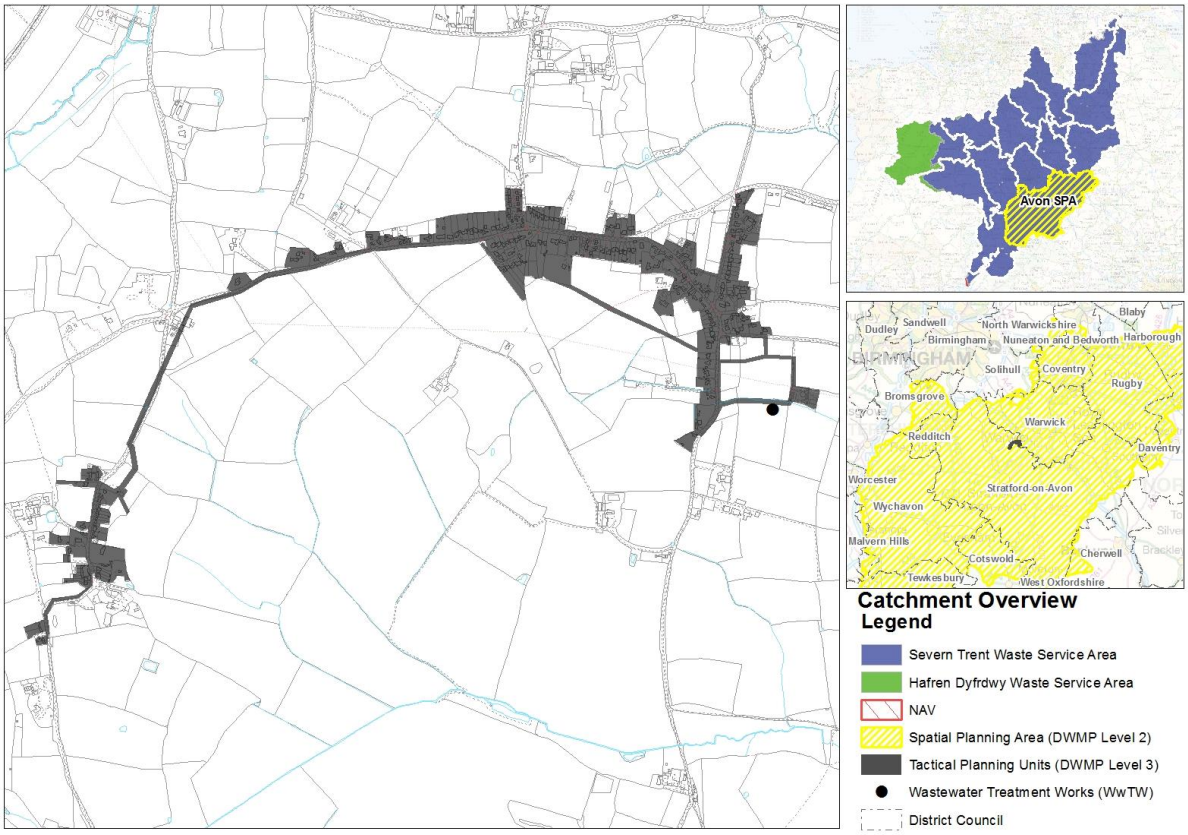
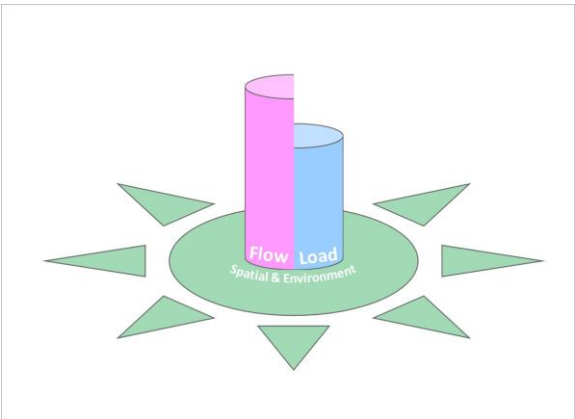


Figure 187 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 188 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 350 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 351 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 352 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 353 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	1	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 354 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
OLD MILVERTON (10322)

March 2023

WONDERFUL ON TAP

Overview

Old Milverton WwTW serves a residential population of 58. Treated effluent is discharged to the River Avon.

Key Statistics:

- Residential Population Served: 58
- This is our 705th largest catchment across the whole of Severn Trent, and the 140th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 2.0km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

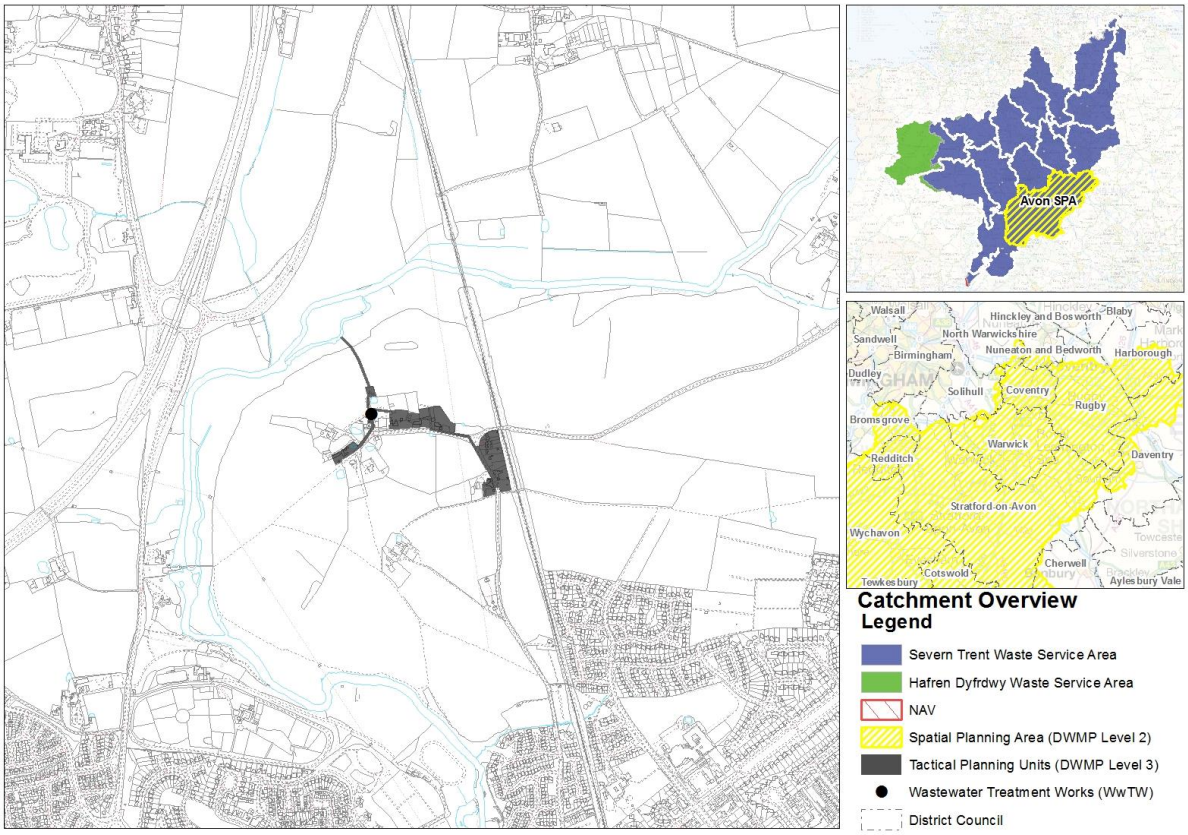
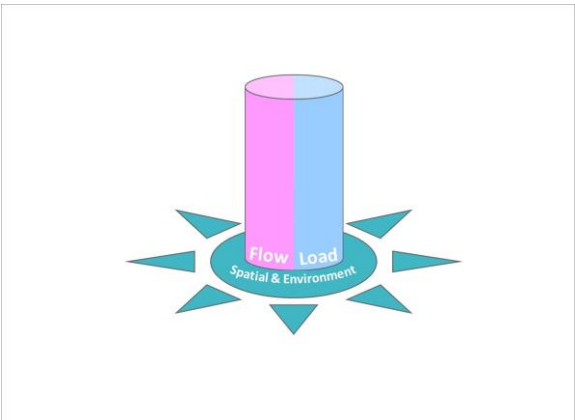


Figure 189 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 190 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 355 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: OXHILL (10323)

March 2023

WONDERFUL ON TAP

Overview

Oxhill WwTW serves a residential population of 443. Treated effluent is discharged to a tributary of the Wyngates Brook.

Key Statistics:

- Residential Population Served: 443
- This is our 441st largest catchment across the whole of Severn Trent, and the 80th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 12.2km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

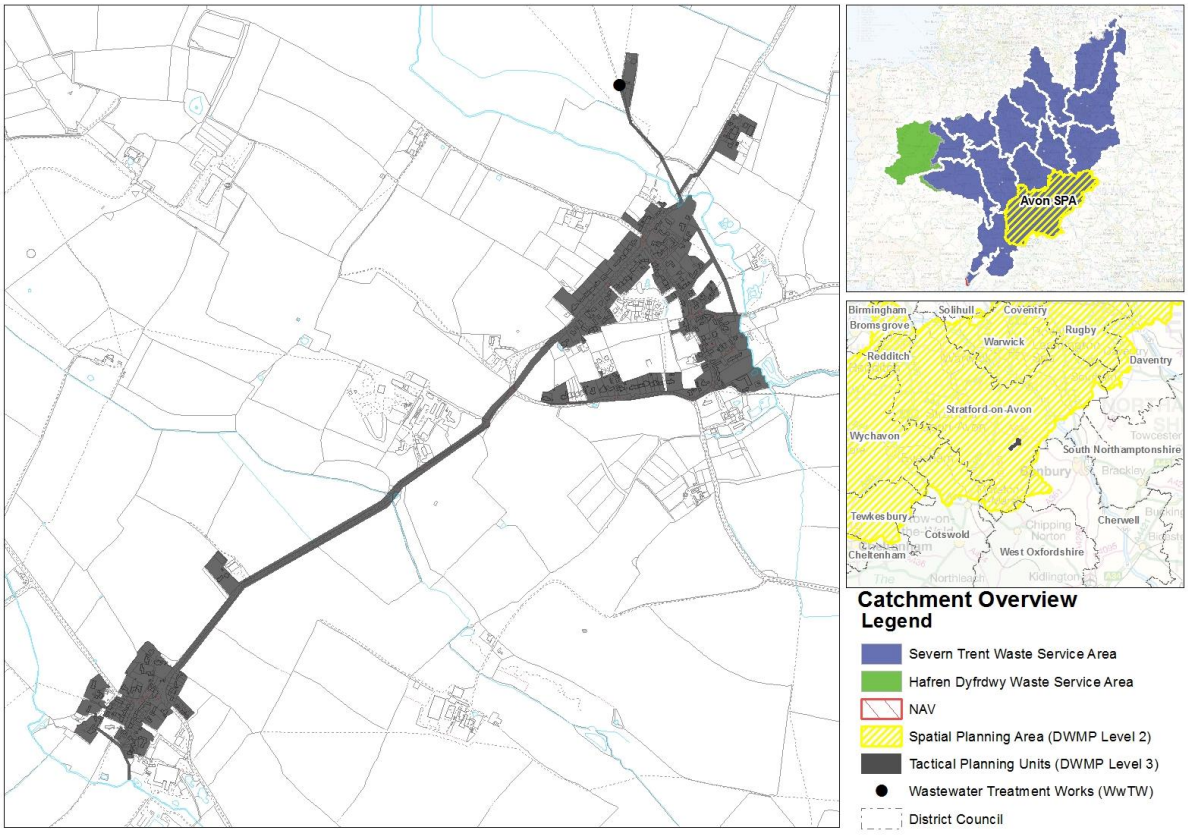
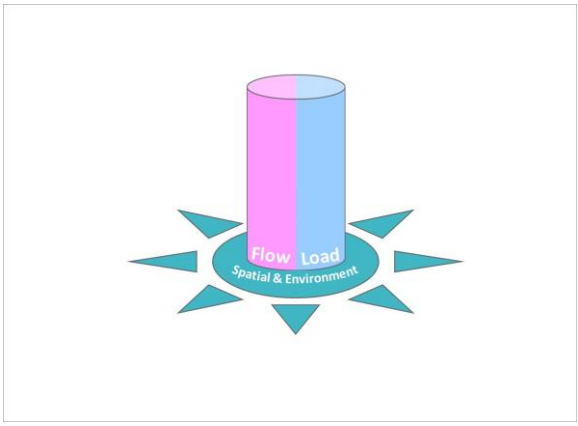


Figure 191 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 192 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 356 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
PEBWORTH MIDDLESEX (10059)

March 2023

WONDERFUL ON TAP

Overview

Pebworth Middlesex WwTW serves a residential population of 33. Treated effluent is discharged to the Bickmarsh Brook.

Key Statistics:

- Residential Population Served: 33
- This is our 764th largest catchment across the whole of Severn Trent, and the 145th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has <1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

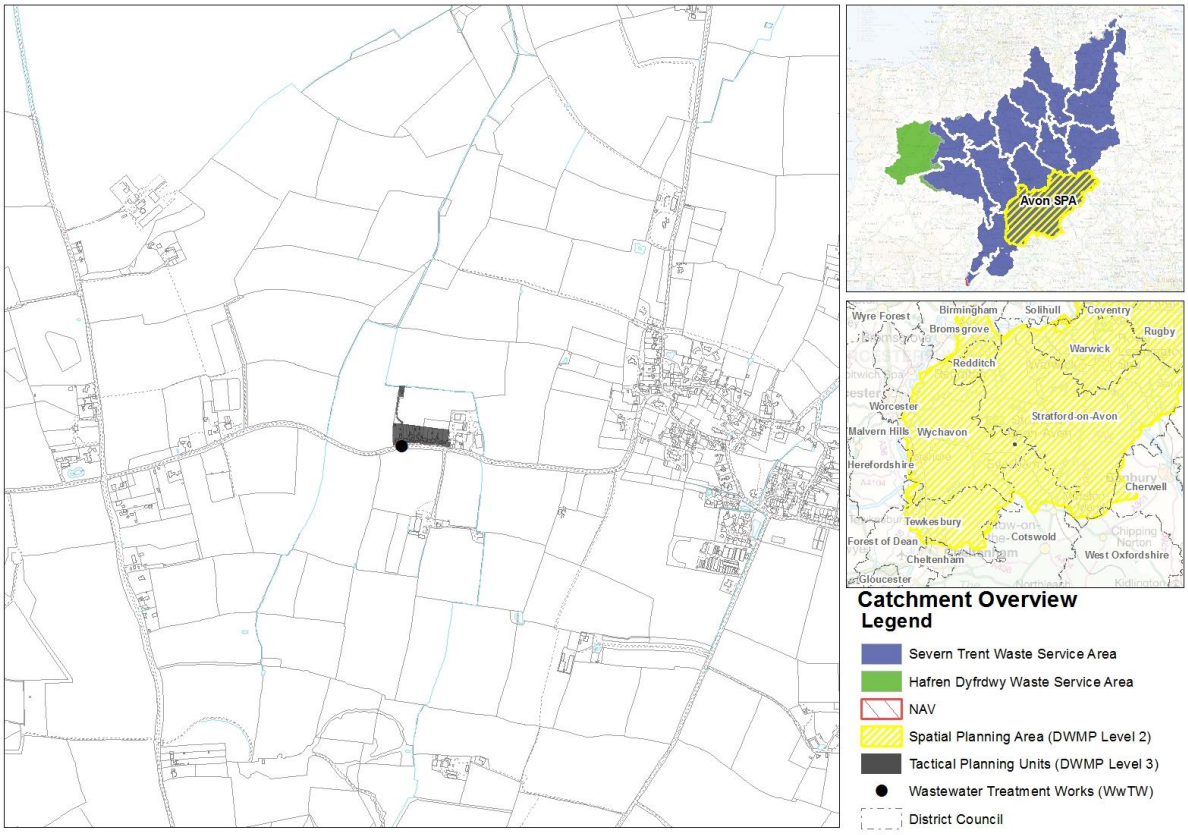
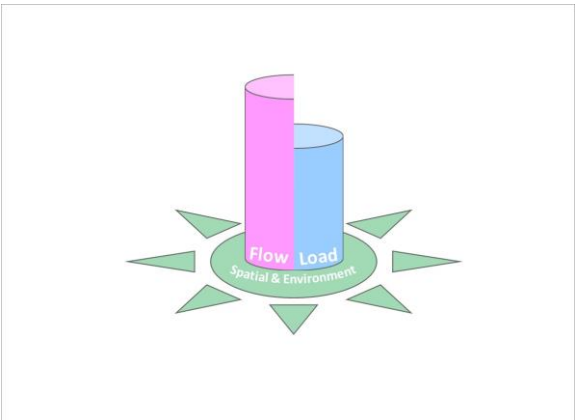


Figure 193 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 194 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 357 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
PEOPLETON (10039)

March 2023

WONDERFUL ON TAP

Overview

Peopleton WwTW is located to the north west of Peopleton and serves a residential population of 467. Treated effluent is discharged to the Bow Brook.

Key Statistics:

- Residential Population Served: 467
- This is our 431st largest catchment across the whole of Severn Trent, and the 79th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 5.7km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

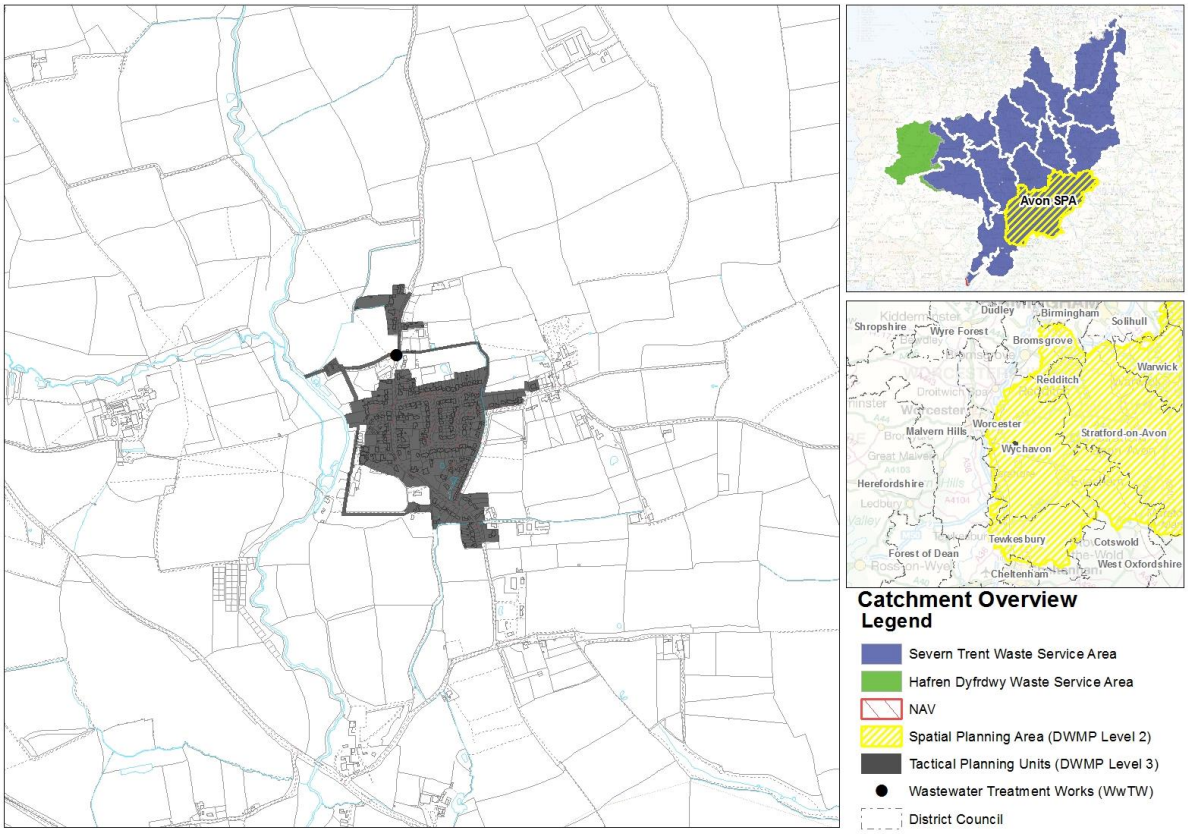
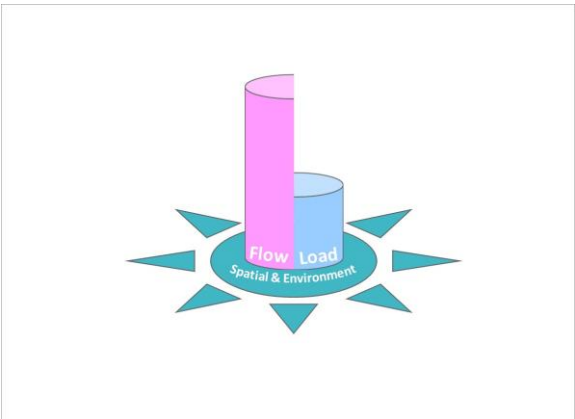


Figure 195 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 196 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 358 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 359 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 360 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 361 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	1	1	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 362 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: PERSHORE (10040)

March 2023

WONDERFUL ON TAP

Overview

Pershore WwTW is located to the south east of Pershore and serves a residential population of 11,646. Treated effluent is discharged to the Bow Brook. In addition to treating flows from Pershore (pumped) it also drains the outlying villages of Drakes Broughton, Pinvin and Wyre Piddle to the north (pumped) and Pensham and Wick to the south (pumped).

Key Statistics:

- Residential Population Served: 11,646
- This is our 110th largest catchment across the whole of Severn Trent, and the 12th largest in the Avon Stategic Planning Area making up 1% of its population.
- It has 114.4km of public foul water sewers and 39.3km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

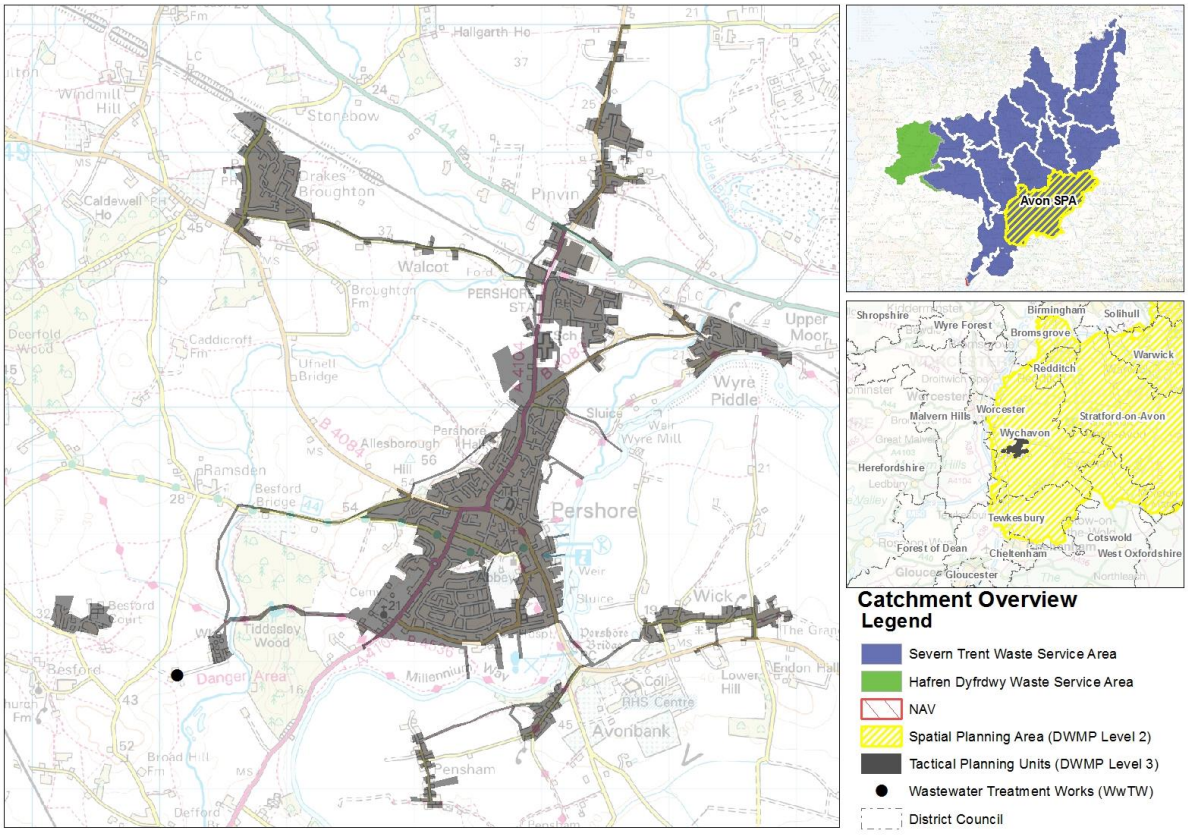
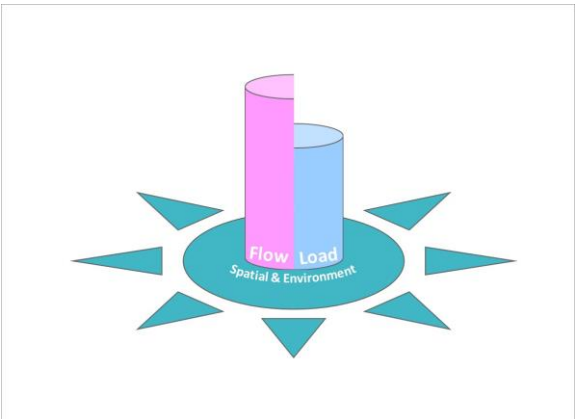


Figure 197 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 198 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 363 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 364 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 365 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 366 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	1	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 367 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

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Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
PRESTON-ON-STOUR (10324)

March 2023

WONDERFUL ON TAP

Overview

Preston-On-Stour WwTW serves a residential population of 543. Treated effluent is discharged to the River Stour.

Key Statistics:

- Residential Population Served: 543
- This is our 417th largest catchment across the whole of Severn Trent, and the 78th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 15.7km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

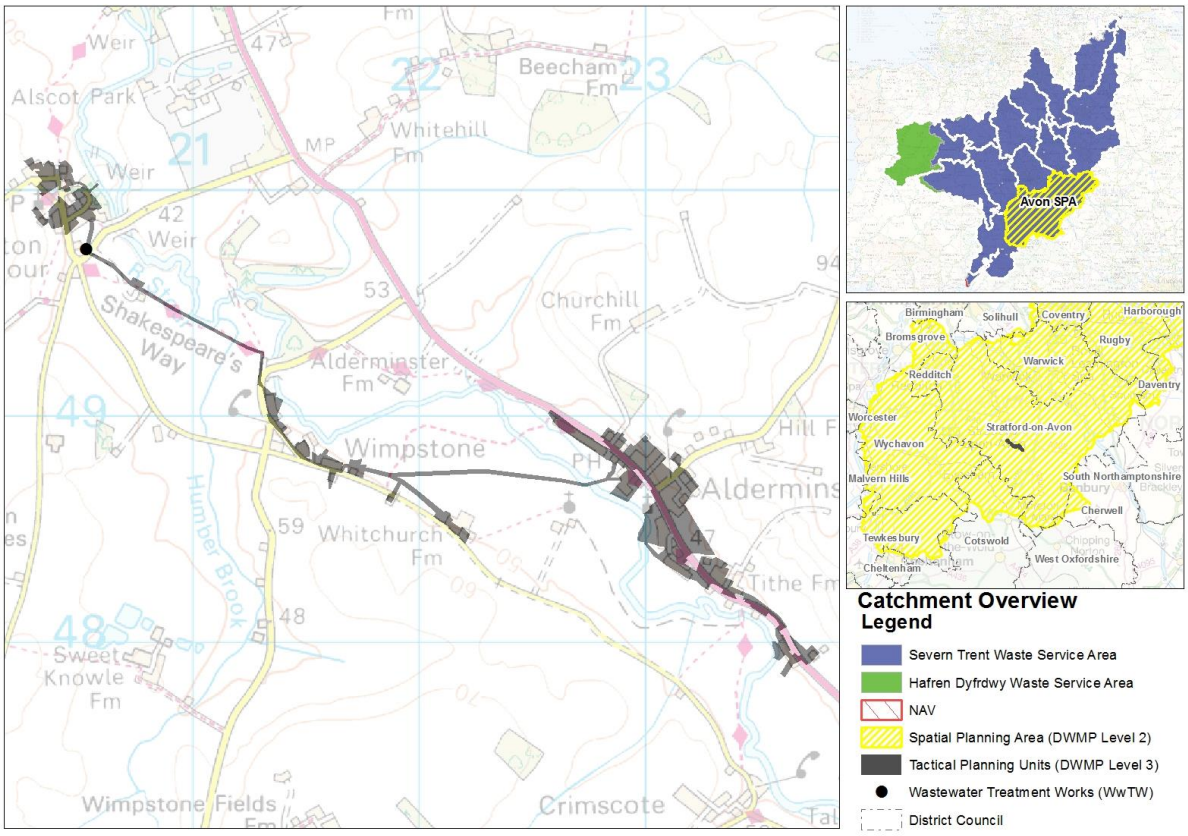
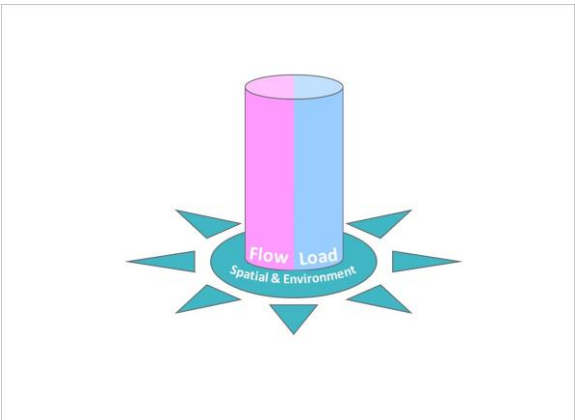


Figure 199 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 200 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 368 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
PRIEST BRIDGE (10163)

March 2023

WONDERFUL ON TAP

SEVERN
TRENT

Overview

Priest Bridge WwTW is located to the south west of the catchment and serves a residential population of 13,710. Treated effluent is discharged to the Bow Brook. The main centre of population served is the Headless Cross and Hunt End areas on the west of Redditch (gravity). In addition to treating flows from Redditch the catchment also drains the outlying villages of Stock Green to the south of the works (gravity), Feckenham to the north east (gravity) and part of AWwTWood Bank to the east (gravity).

Key Statistics:

- Residential Population Served: 13,710
- This is our 98th largest catchment across the whole of Severn Trent, and the 11th largest in the Avon Stategic Planning Area making up 1% of its population.
- It has 135.8km of public foul water sewers and 74.5km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

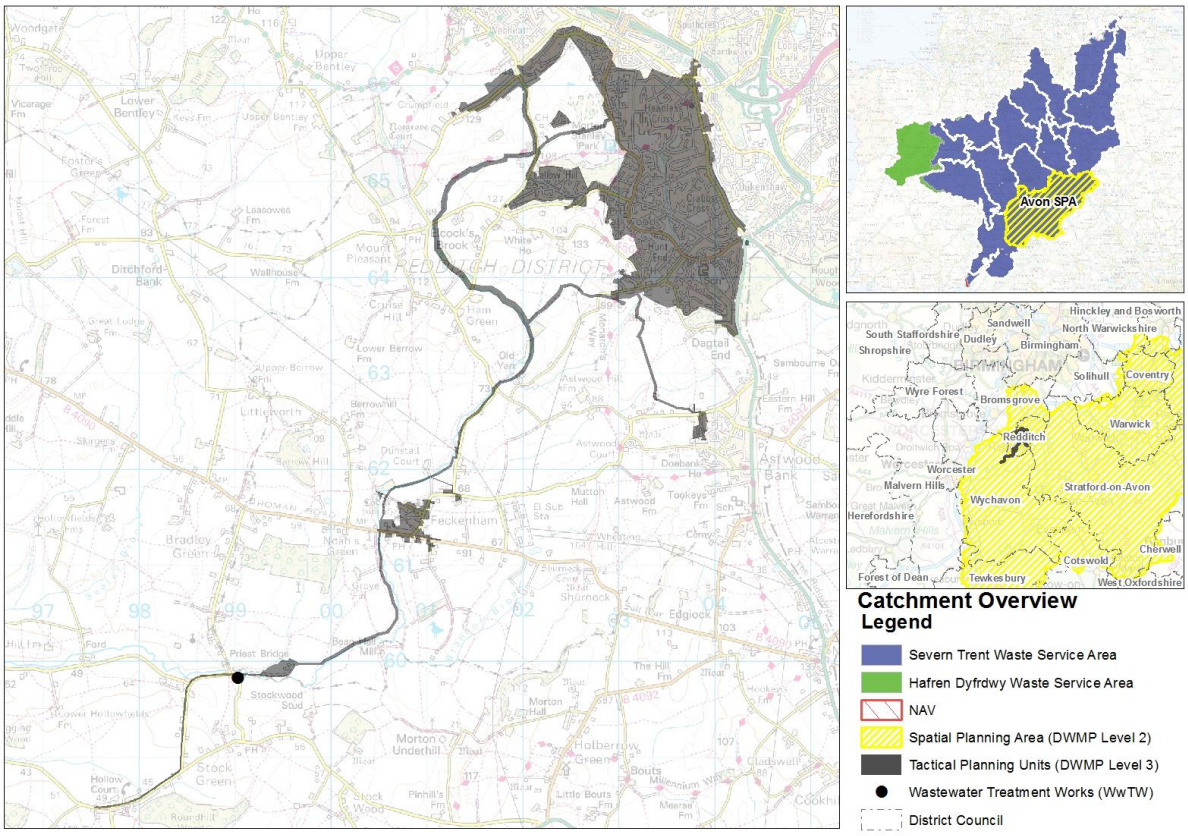
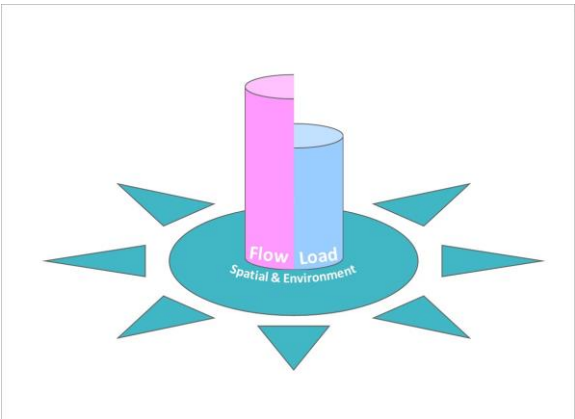


Figure 201 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 202 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 369 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	Yes

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
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Due to this catchment triggering on 5 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 370 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 371 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 372 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 373 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

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Contacting us

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Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
PRIORS HARDWICK (10395)

March 2023

WONDERFUL ON TAP

Overview

Priors Hardwick WwTW serves a residential population of 154. Treated effluent is discharged to a tributary of the River Itchen.

Key Statistics:

- Residential Population Served: 154
- This is our 579th largest catchment across the whole of Severn Trent, and the 118th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 4.4km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

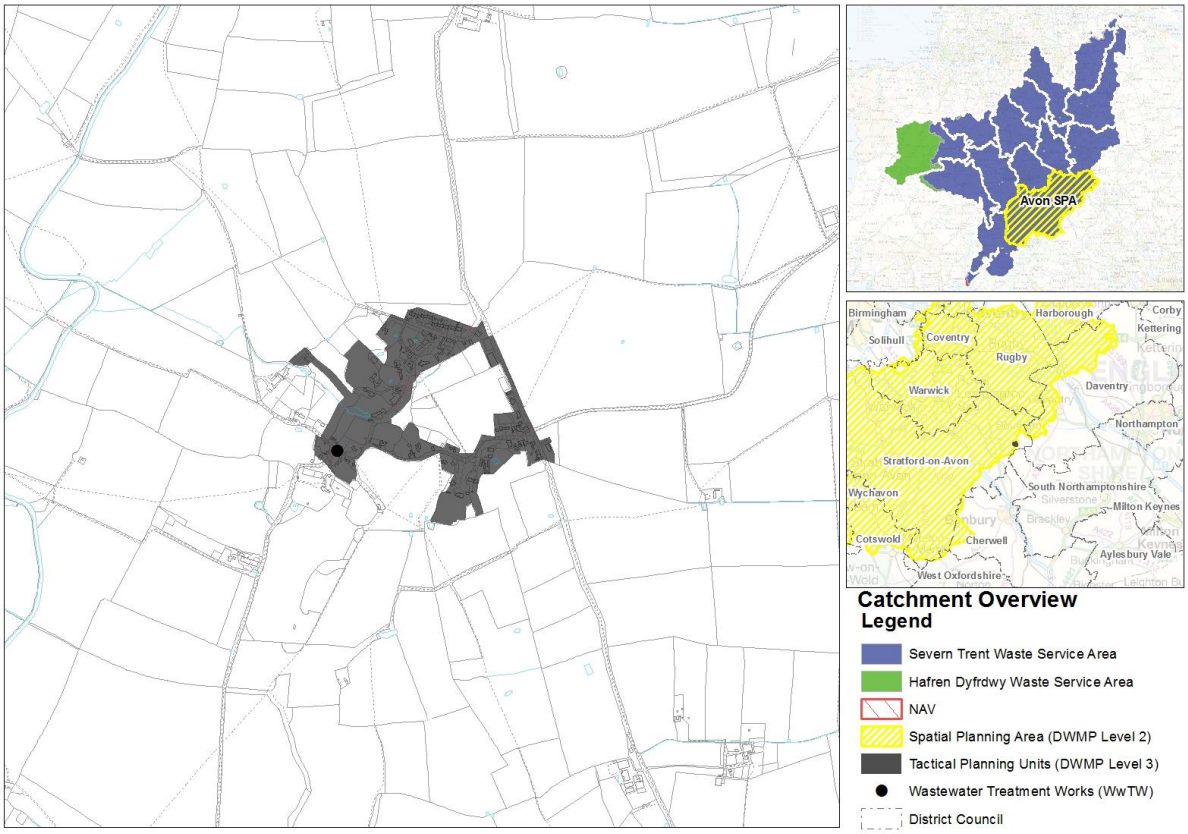
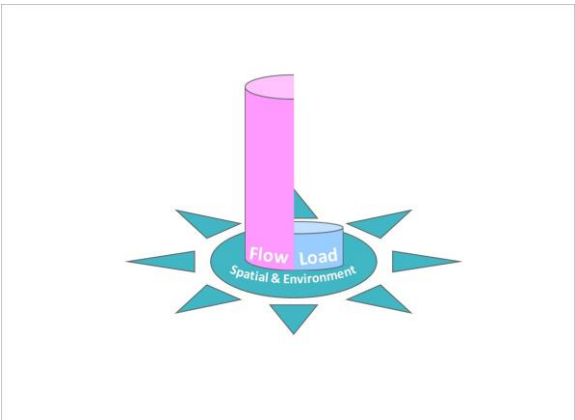


Figure 203 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 204 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 374 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: RADWAY (10325)

March 2023

WONDERFUL ON TAP

Overview

Radway WwTW serves a residential population of 252. Treated effluent is discharged to a tributary of the River Dene.

Key Statistics:

- Residential Population Served: 252
- This is our 509th largest catchment across the whole of Severn Trent, and the 101st largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 7.2km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

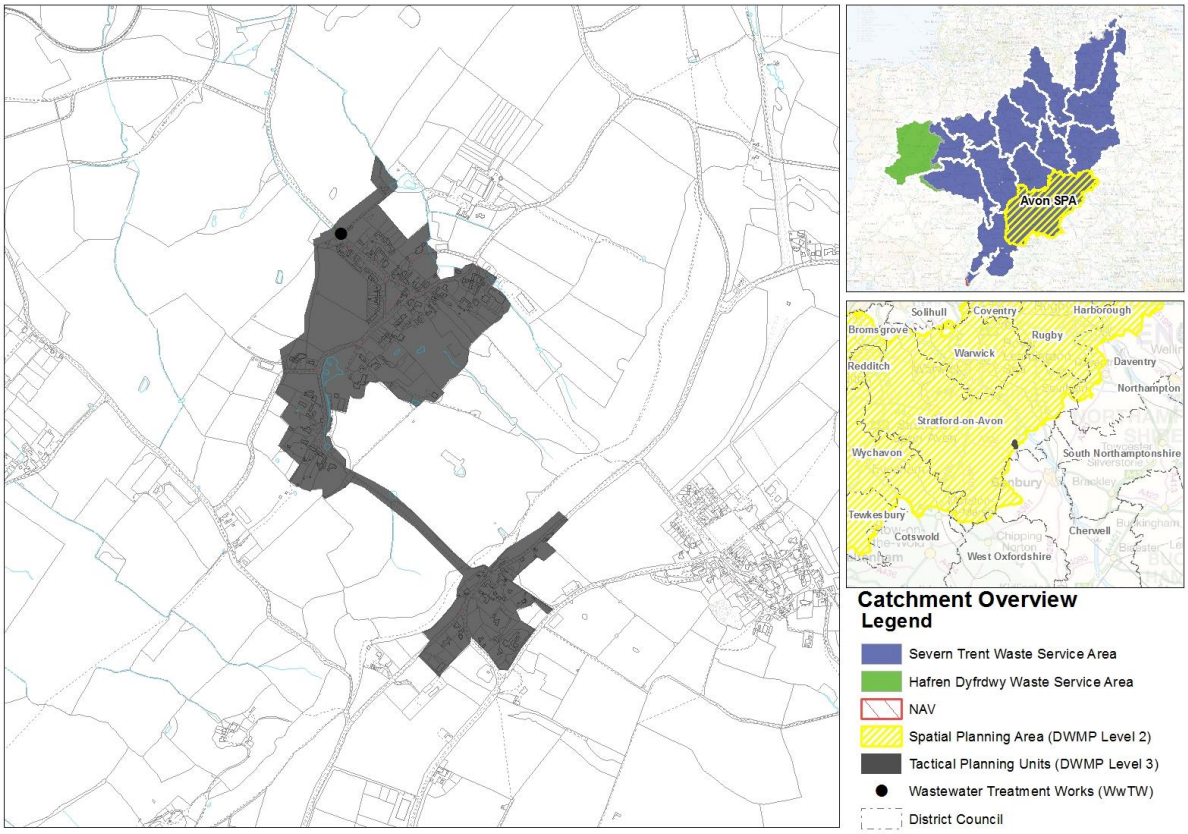
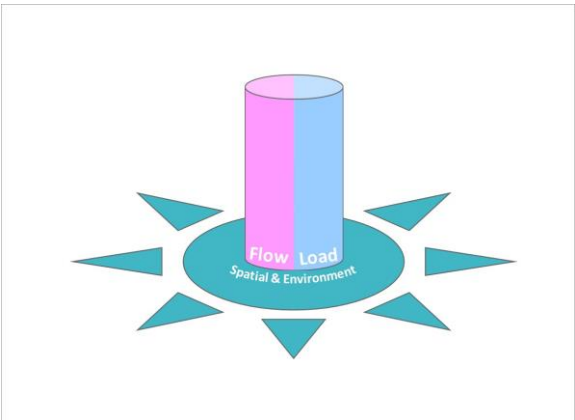


Figure 205 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 206 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 375 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
REDDITCH (SPERNAL) (10168)

March 2023

WONDERFUL ON TAP

SEVERN
TRENT

Overview

Redditch (Spernal) WwTW is located to the south east of Reditch and serves a residential population of 80,291. Treated effluent is discharged to the River Arrow. In addition to treating flows from Redditch, the catchment also drains the outlying villages of Webheath and Headless Cross to the west (gravity) and Mappleborough Green to the south east (gravity).

Key Statistics:

- Residential Population Served: 80,291
- This is our 25th largest catchment across the whole of Severn Trent, and the 4th largest in the Avon Stategic Planning Area making up 7% of its population.
- It has 561.5km of public foul water sewers and 430.0km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

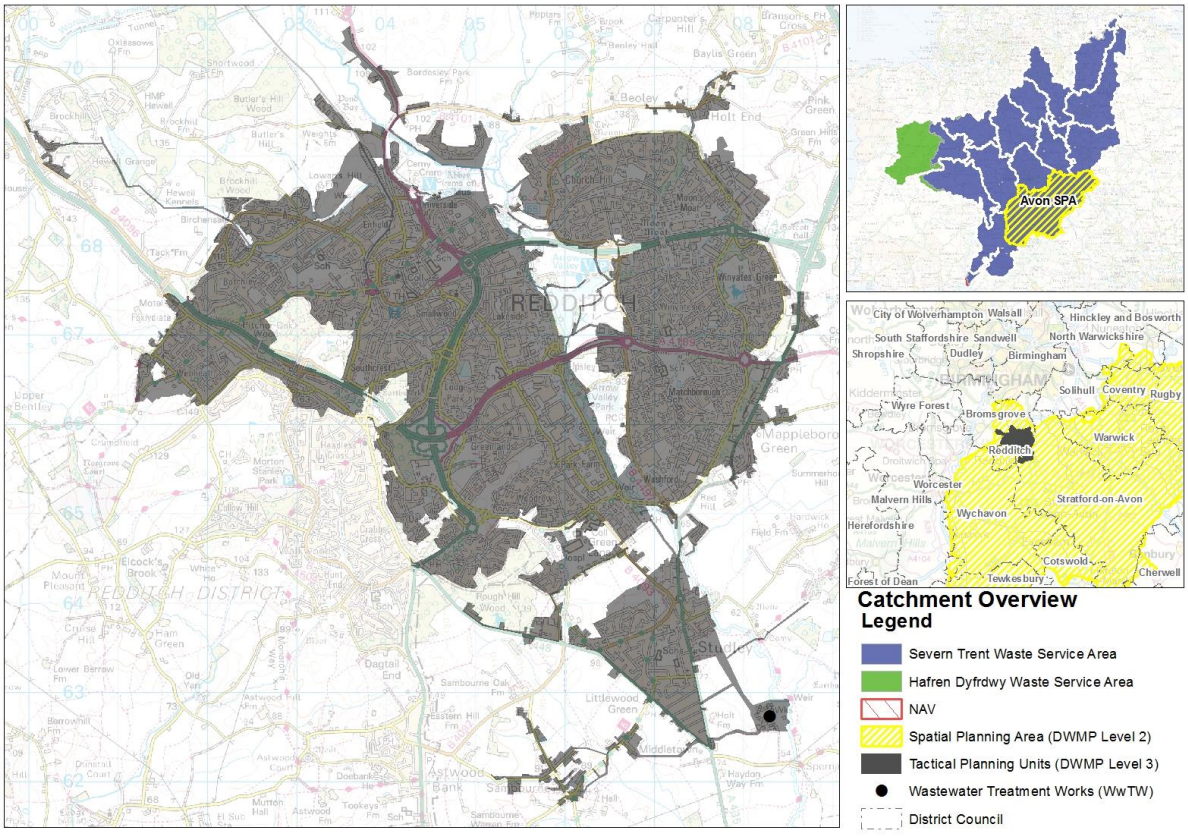
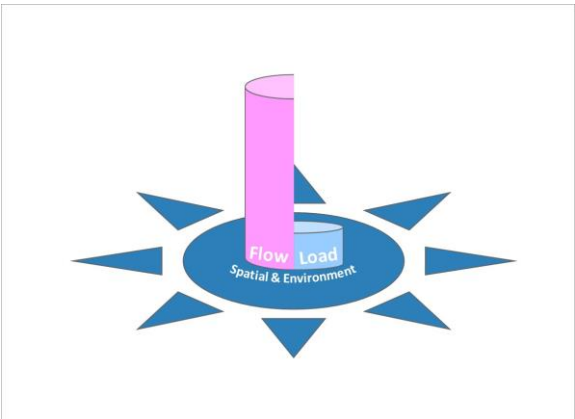


Figure 207 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



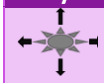
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 208 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 376 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 4 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 377 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 378 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 379 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	2	2	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 380 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: RIDGEWAY (10176)

March 2023

WONDERFUL ON TAP

Overview

Ridgeway WwTW serves a residential population of 952. Treated effluent is discharged to a tributary of the Piddle Brook.

Key Statistics:

- Residential Population Served: 952
- This is our 337th largest catchment across the whole of Severn Trent, and the 54th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 23.2km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

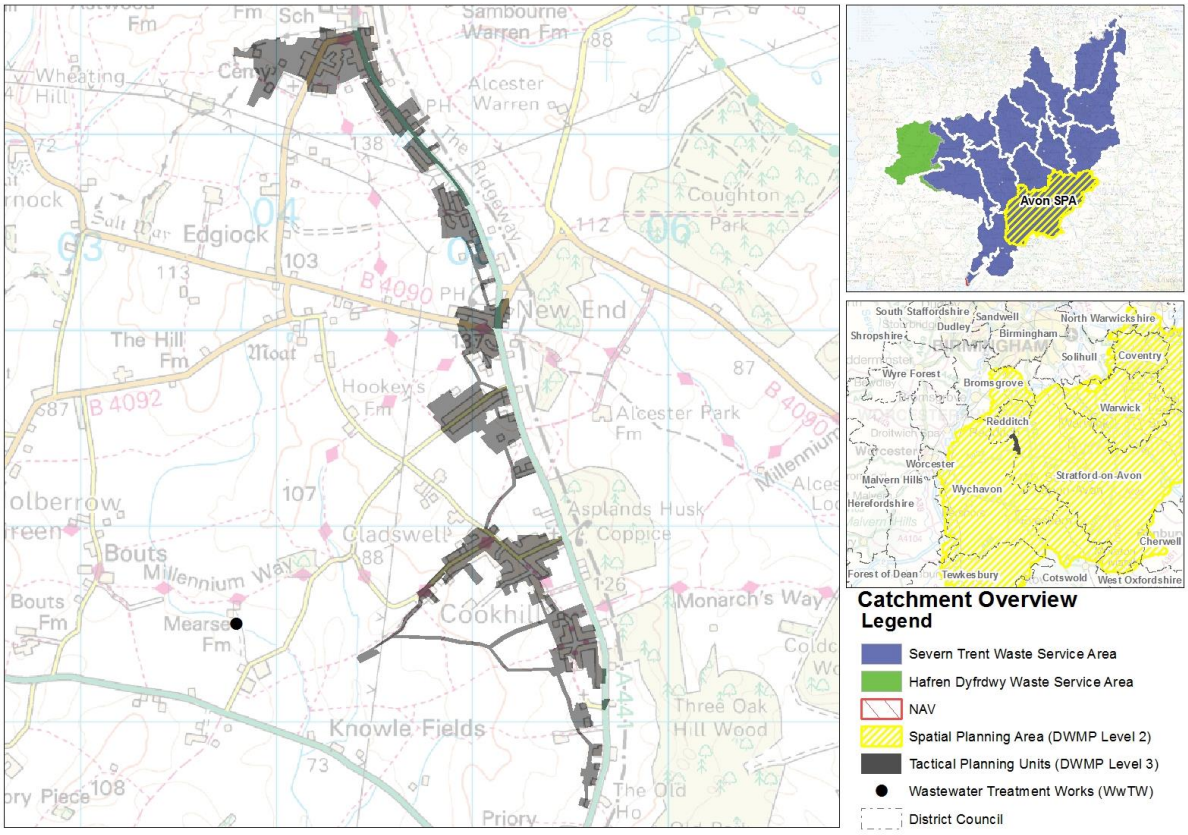
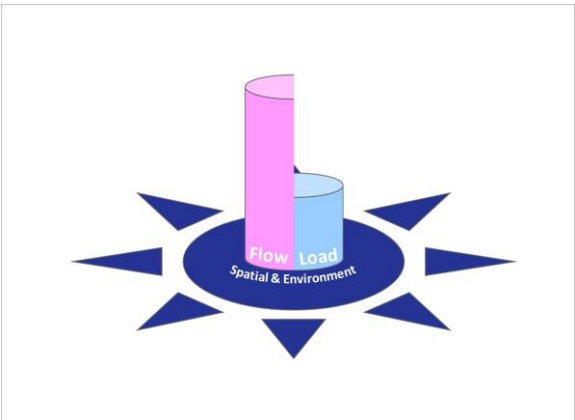


Figure 209 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 210 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 381 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
ROUS LENCH (10174)

March 2023

WONDERFUL ON TAP

Overview

Rous Lench WwTW serves a residential population of 135. Treated effluent is discharged to the Whitsun Brook.

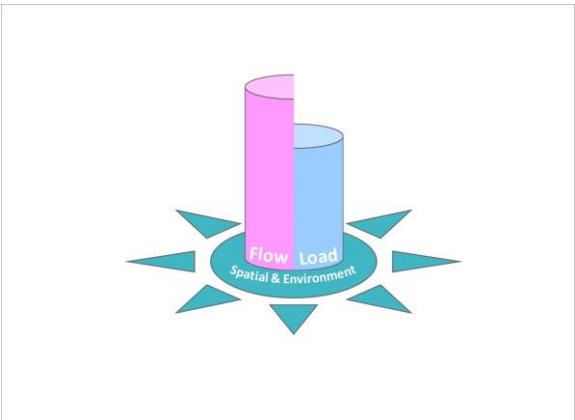
Key Statistics:

- Residential Population Served: 135
- This is our 591st largest catchment across the whole of Severn Trent, and the 120th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 4.0km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

Figure 211 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 212 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 382 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

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Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: ROWINGTON (10353)

March 2023

WONDERFUL ON TAP

Overview

Rowington WwTW is located to the west of Rowington and serves a residential population of 1,889. Treated effluent is discharged to the Kingswood Brook. In addition to treating flows from Rowington (gravity) it also drains the outlying villages of Baddesley Clinton and Lapworth in the north (gravity) and Lowsonford to the south (pumped).

Key Statistics:

- Residential Population Served: 1,889
- This is our 262nd largest catchment across the whole of Severn Trent, and the 35th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 44.9km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

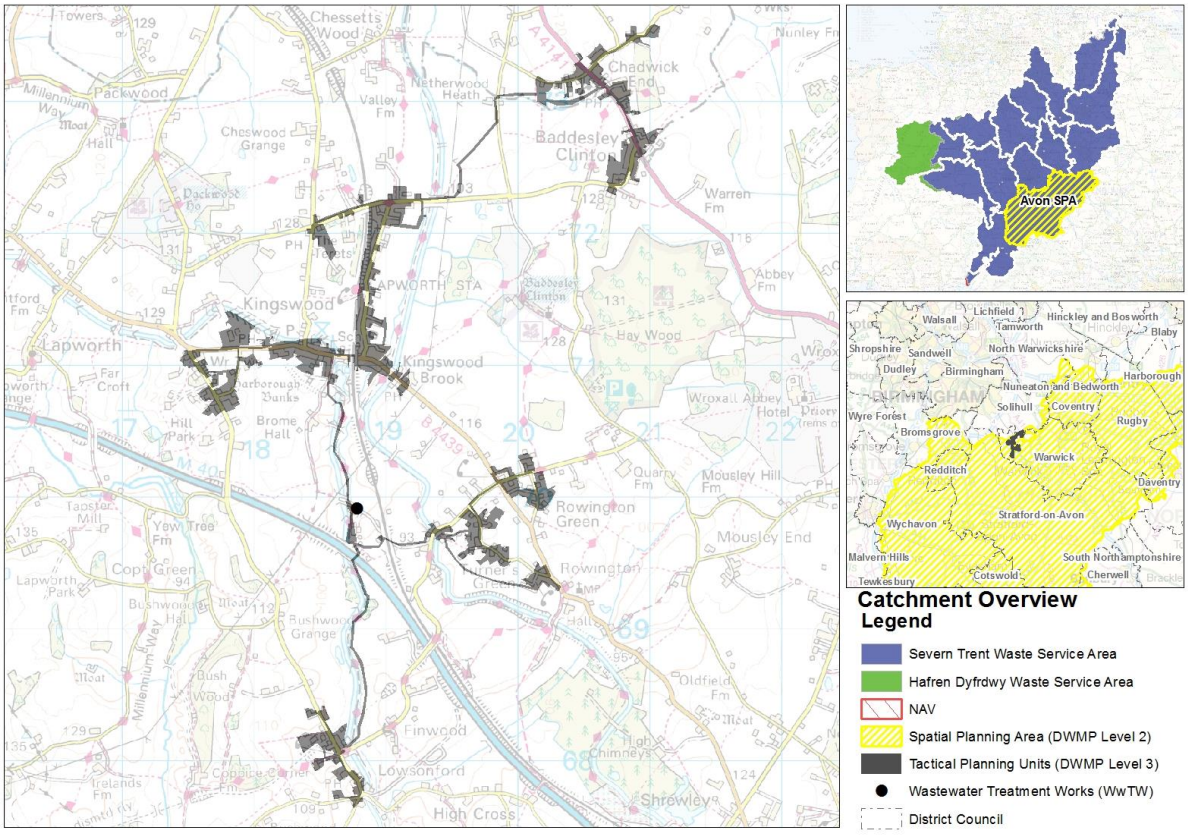
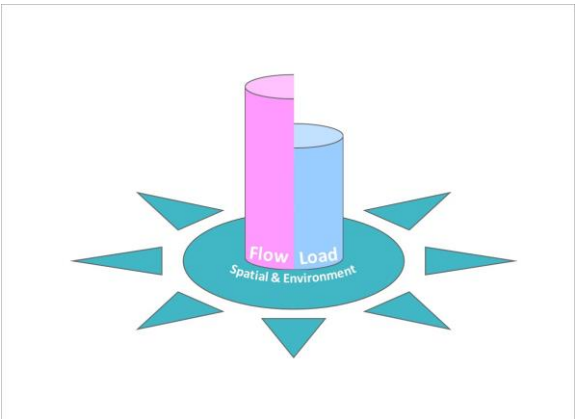


Figure 213 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 214 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 383 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	Yes
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	Yes
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 6 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 384 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 385 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 386 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	1	1	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 387 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	•
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
RUGBY NEWBOLD (10429)

March 2023

WONDERFUL ON TAP

Overview

Rugby Newbold WwTW is located to the North West of Rugby and serves a residential population of 104,216. Treated effluent is discharged to the River Avon. It mainly treats flows from the town of Rugby and the catchment is a mixture of pumped and gravity.

Key Statistics:

- Residential Population Served: 104,216
- This is our 19th largest catchment across the whole of Severn Trent, and the 3rd largest in the Avon Stategic Planning Area making up 9% of its population.
- It has 532.7km of public foul water sewers and 376.5km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

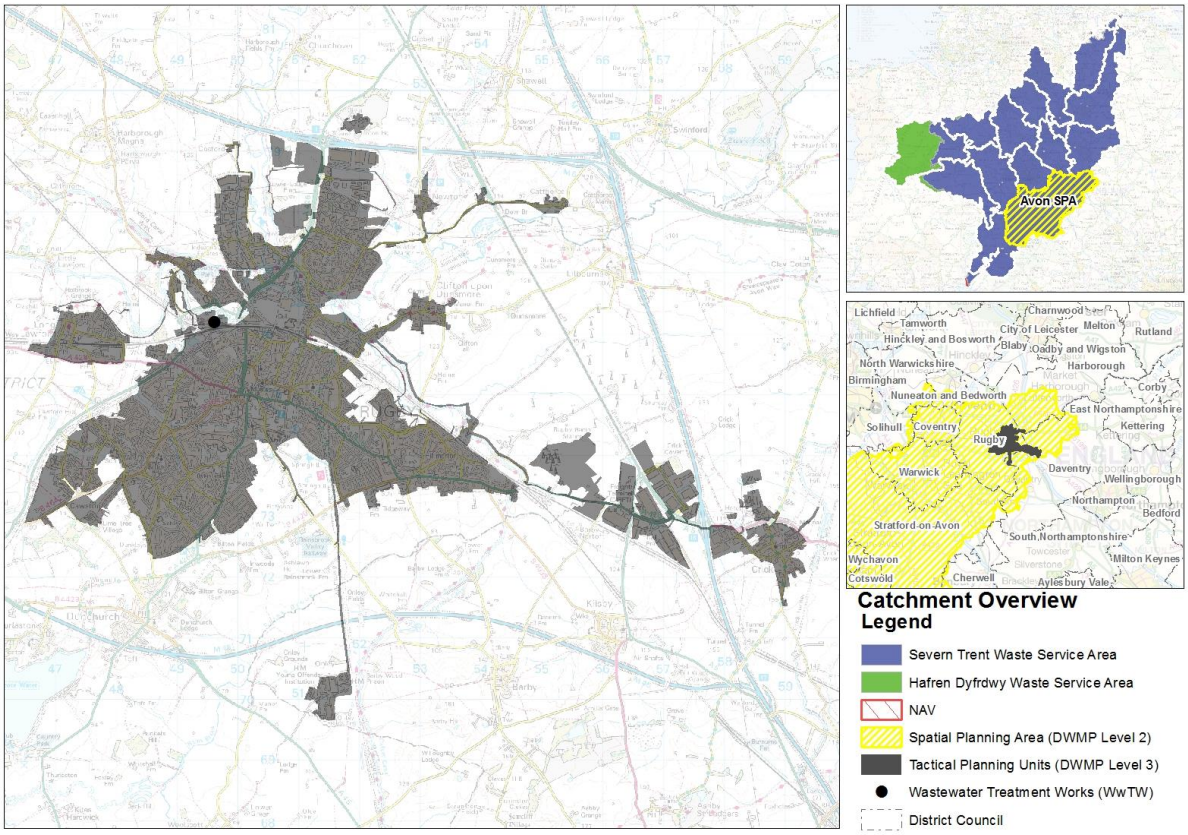
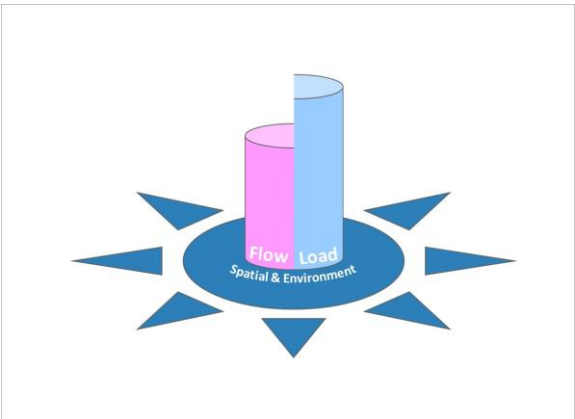


Figure 215 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



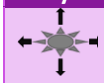
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 216 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 388 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 6 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 389 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 390 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 391 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	1	1	1	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	1	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 392 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	✓✓
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	•
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	•
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	•
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
SALE GREEN (17926)

March 2023

WONDERFUL ON TAP

Overview

Sale Green WwTW serves a residential population of 123. Treated effluent is discharged to the Little Brook.

Key Statistics:

- Residential Population Served: 123
- This is our 603rd largest catchment across the whole of Severn Trent, and the 122nd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 3.8km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

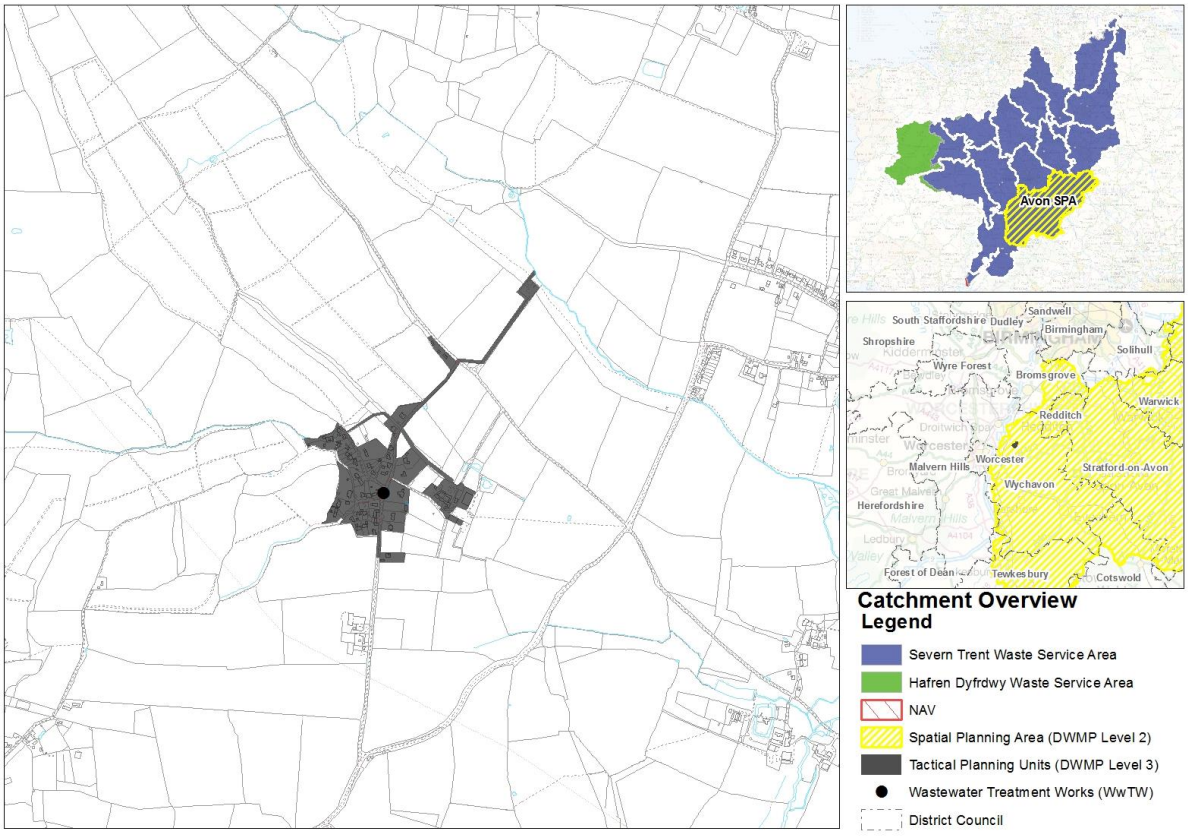
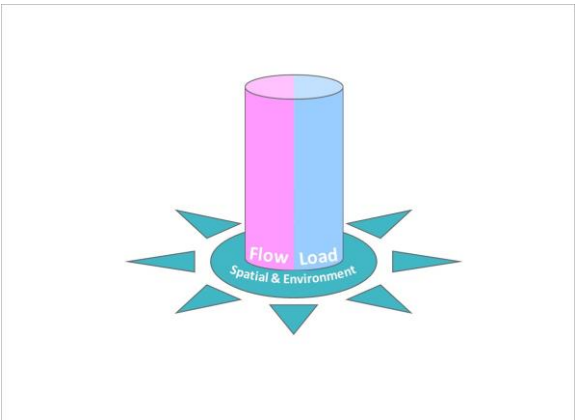


Figure 217 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



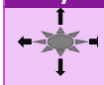
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 218 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 393 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: SEDGEBERROW (10022)

March 2023

WONDERFUL ON TAP

Overview

Sedgeberrow WwTW is located to the north of Bishampton and serves a residential population of 834 (gravity). Treated effluent is discharged to the River Isbourne.

Key Statistics:

- Residential Population Served: 834
- This is our 347th largest catchment across the whole of Severn Trent, and the 57th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 5.9km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

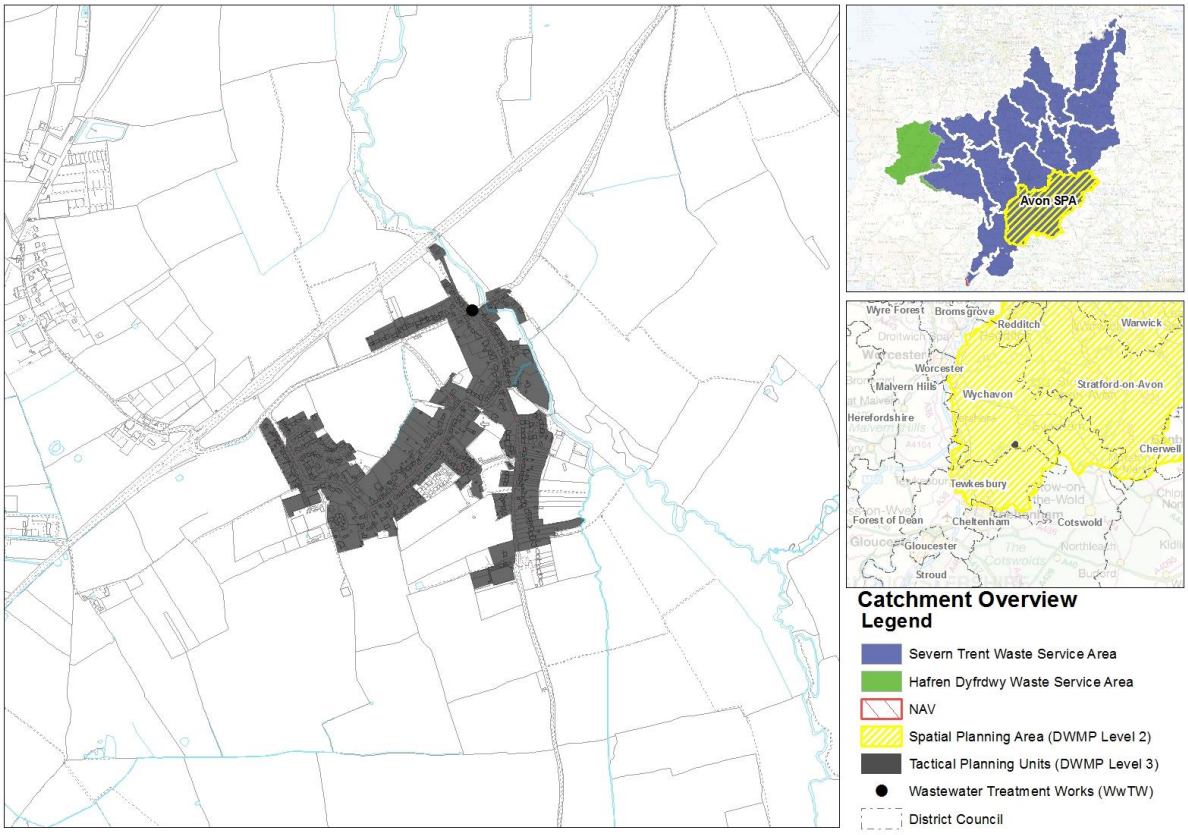
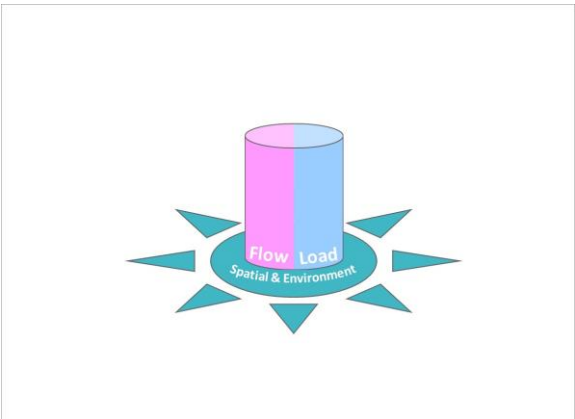


Figure 219 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 220 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 394 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 395 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 396 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 397 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 398 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: SHAWELL (11235)

March 2023

WONDERFUL ON TAP

Overview

Shawell WwTW is located to the north of the village of Shawell and serves a residential population of 125. Treated effluent is discharged to a tributary of the River Avon.

Key Statistics:

- Residential Population Served: 125
- This is our 600th largest catchment across the whole of Severn Trent, and the 121st largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 3.7km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

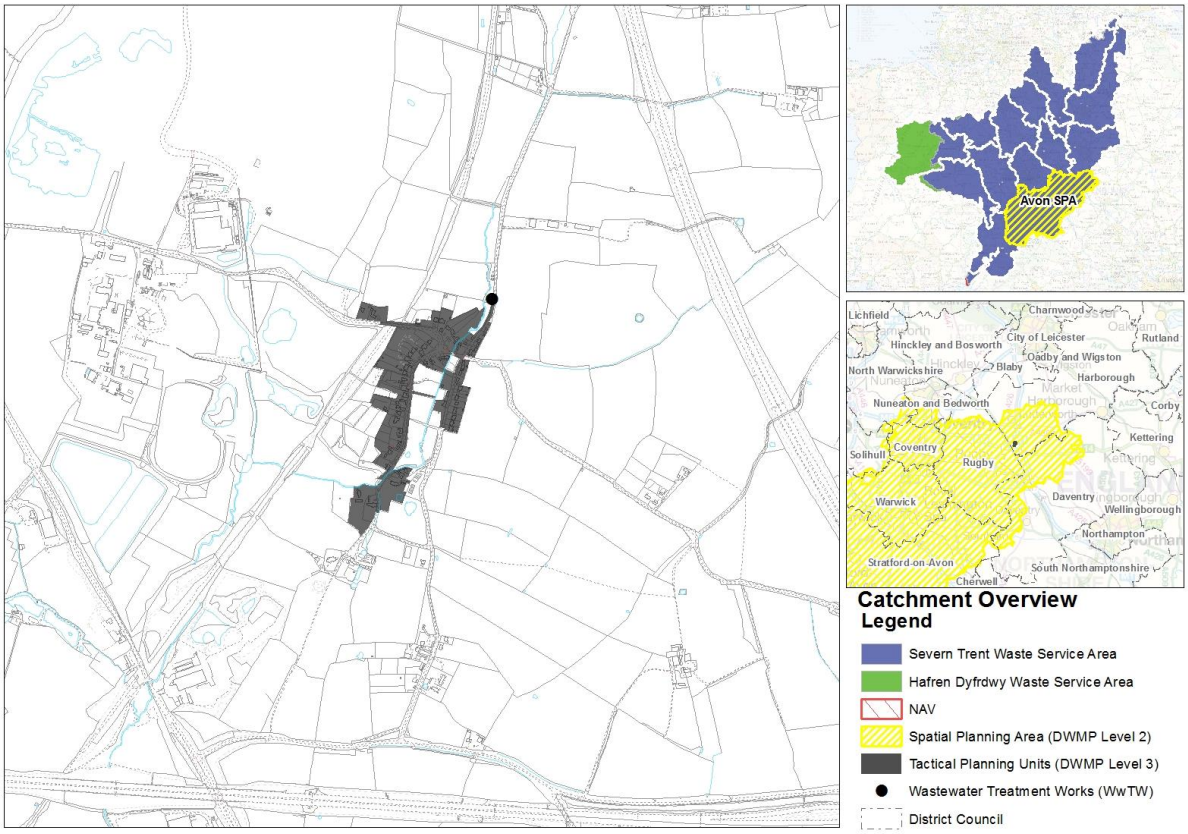
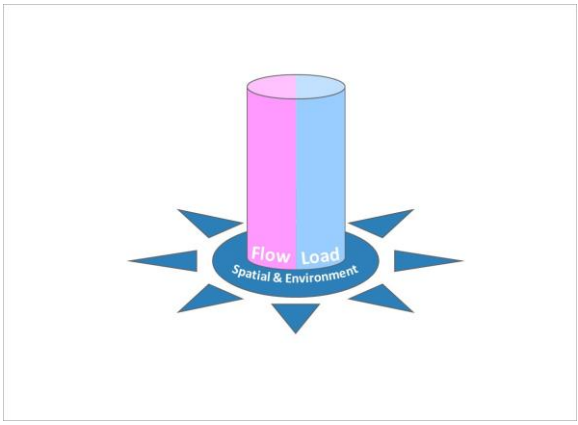


Figure 221 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 222 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 399 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 400 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 401 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 402 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	1	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 403 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	✓
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	•
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	•
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
SHIPSTON FELL MILL (10332)

March 2023

WONDERFUL ON TAP

Overview

Shipston Fell Mill WwTW is located to the east of Shipston-on-Stour (pumped) and serves a residential population of 7,293. Treated effluent is discharged to the River Stour. In addition to treating flows from Shispton-on-Stour, the catchment also drains the outlying villages of Tredington, Halford and Newbold-on-Stour to the north (pumped) and Willington to the south (pumped).

Key Statistics:

- Residential Population Served: 7,293
- This is our 145th largest catchment across the whole of Severn Trent, and the 18th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 93.7km of public foul water sewers and 25.5km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

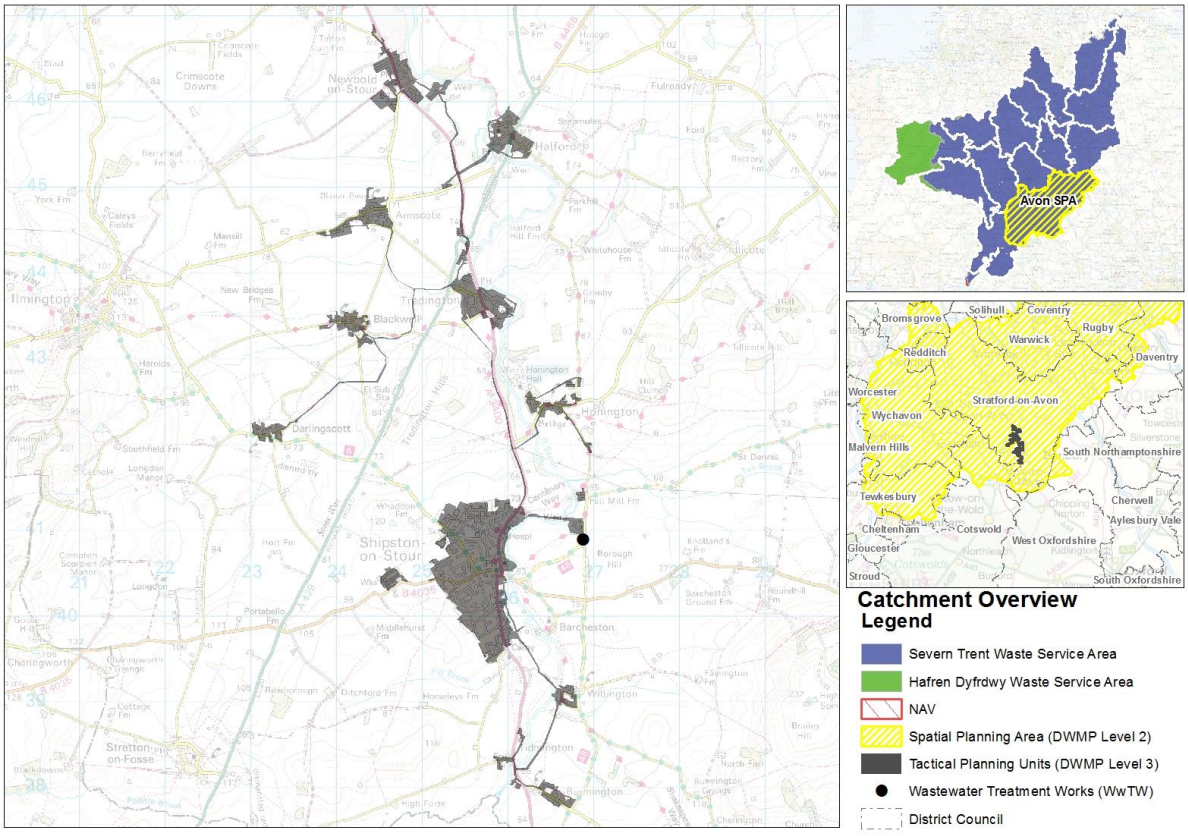
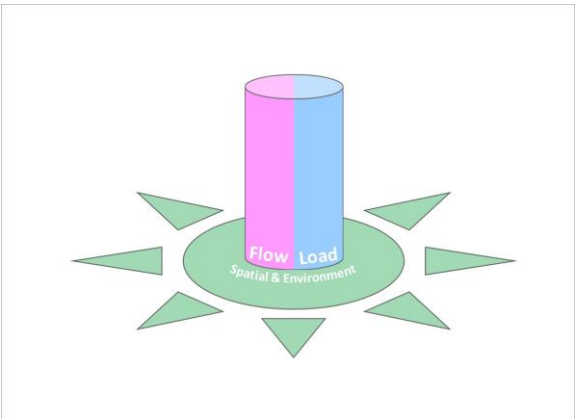


Figure 223 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 224 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 404 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	Yes
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 6 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 405 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 406 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 407 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	2	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 408 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
SIBFORD FERRIS (10327)

March 2023

WONDERFUL ON TAP

Overview

Sibford Ferris WwTW serves a residential population of 798. Treated effluent is discharged to a tributary of the River Stour.

Key Statistics:

- Residential Population Served: 798
- This is our 355th largest catchment across the whole of Severn Trent, and the 61st largest in the Avon Strategic Planning Area making up <1% of its population.
- It has 10.1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

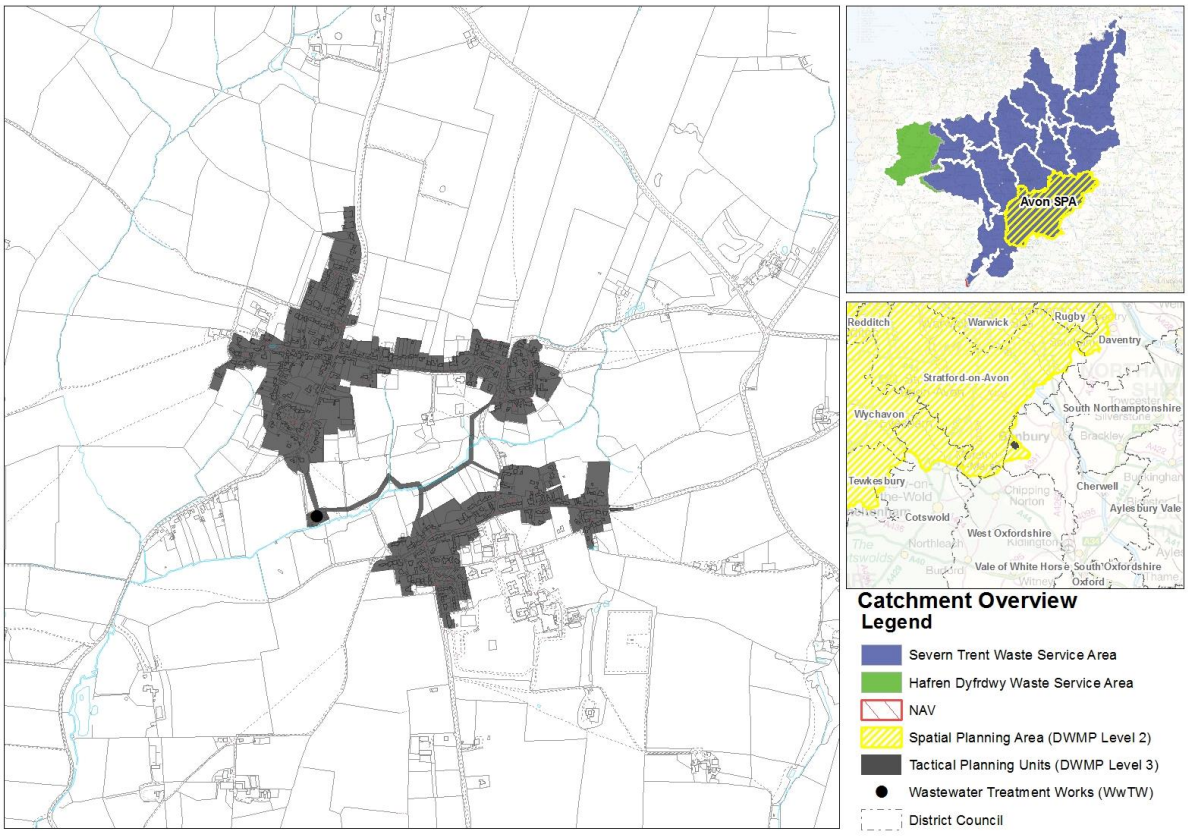
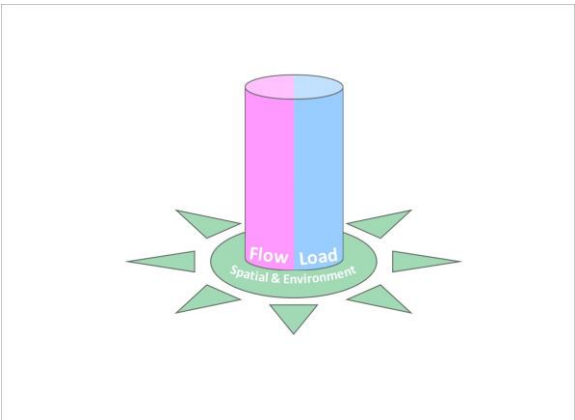


Figure 225 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 226 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 409 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Whilst the catchment triggered through the RBCS assessment, a pre-BRAVA review of the catchment indicated that the triggers were miss-representative of the long-term catchment risk. A decision was subsequently taken to downgrade the RBCS risk, resulting in the catchment not progressing any further along the DWMP process.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: SNEACHILL (10083)

March 2023

WONDERFUL ON TAP

Overview

Sneachill WwTW serves a residential population of 81. Treated effluent is discharged to a tributary of the Stoulton Brook.

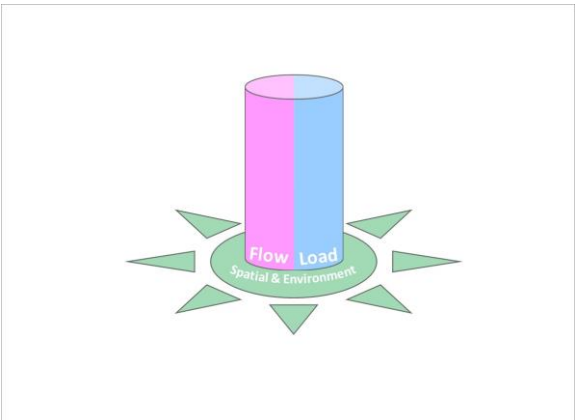
Key Statistics:

- Residential Population Served: 81
- This is our 661st largest catchment across the whole of Severn Trent, and the 133rd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 1.4km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

Figure 227 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 228 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 410 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
SNITTERFIELD (10326)

March 2023

WONDERFUL ON TAP

Overview

Snitterfield WwTW is located to the north east of Snitterfield and serves a residential population of 1,064. Treated effluent is discharged to the Sherbourne Brook.

Key Statistics:

- Residential Population Served: 1,064
- This is our 322nd largest catchment across the whole of Severn Trent, and the 49th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 12.8km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

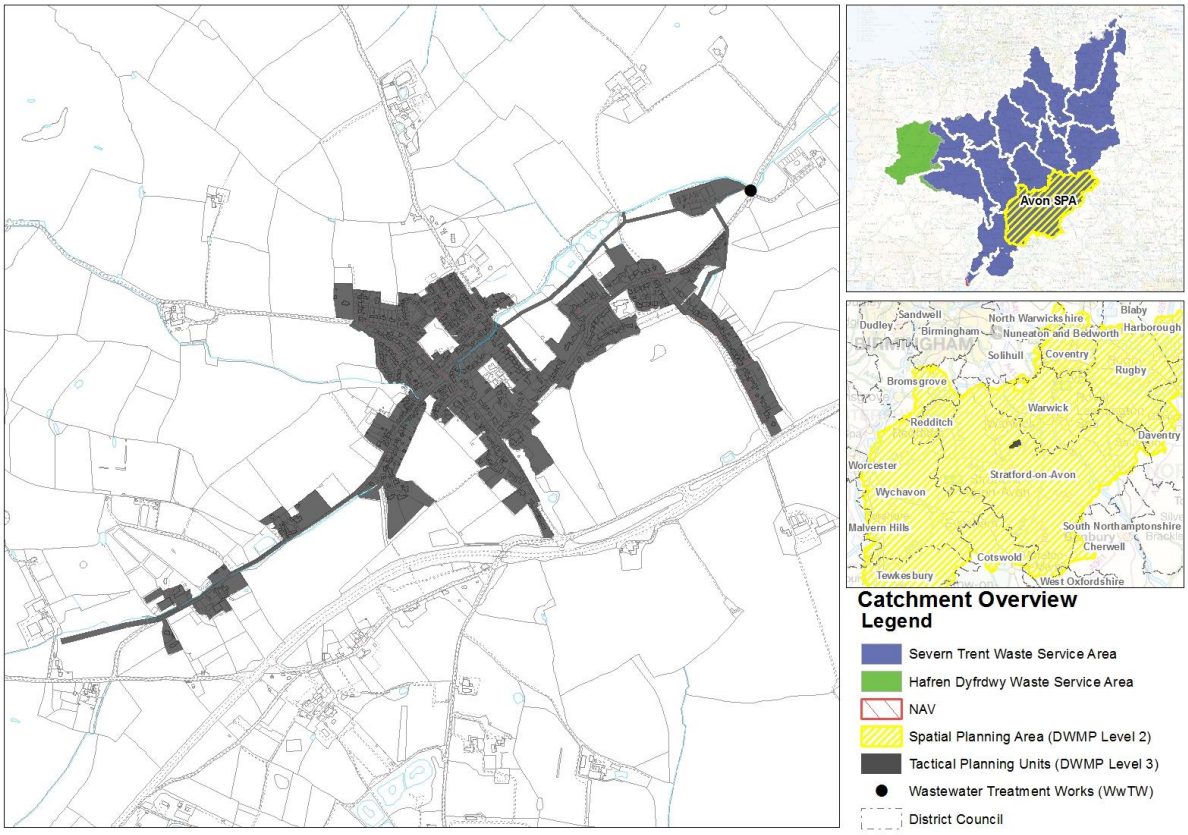
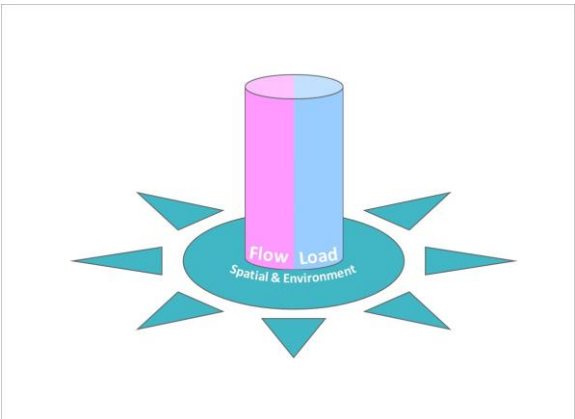


Figure 229 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 230 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 411 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	Yes
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 5 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 412 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 413 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 414 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	1	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 415 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
SNOWDON LODGE (11237)

March 2023

WONDERFUL ON TAP

Overview

Snowdon Lodge WwTW serves a residential population of 5. Treated effluent is discharged to a tributary of the River Avon.

Key Statistics:

- Residential Population Served: 5
- This is our 926th largest catchment across the whole of Severn Trent, and the 151st largest in the Avon Stategic Planning Area making up <1% of its population.
- It has <1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

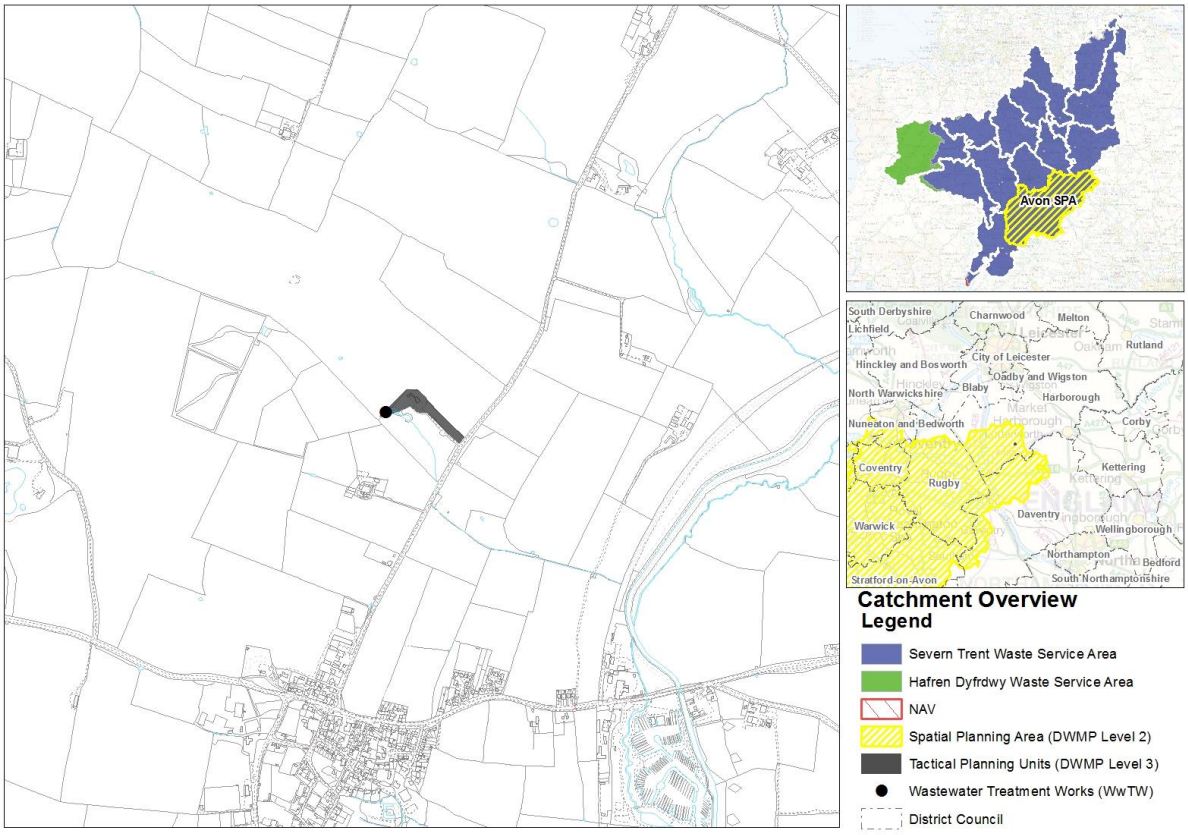


Figure 231 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.

Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 232 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 416 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
SOUTH KILWORTH (11248)

March 2023

WONDERFUL ON TAP

Overview

South Kilworth WwTW is located to the south of the village of South Kilworth and serves a residential population of 1,165. Treated effluent is discharged to the Stanford Reservoir Bypass Channel. In addition to treating flows from South Kilworth, the catchment also drains the outlying village of North Kilworth to the north (pumped).

Key Statistics:

- Residential Population Served: 1,165
- This is our 307th largest catchment across the whole of Severn Trent, and the 42nd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 18.1km of public foul water sewers and 5.0km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

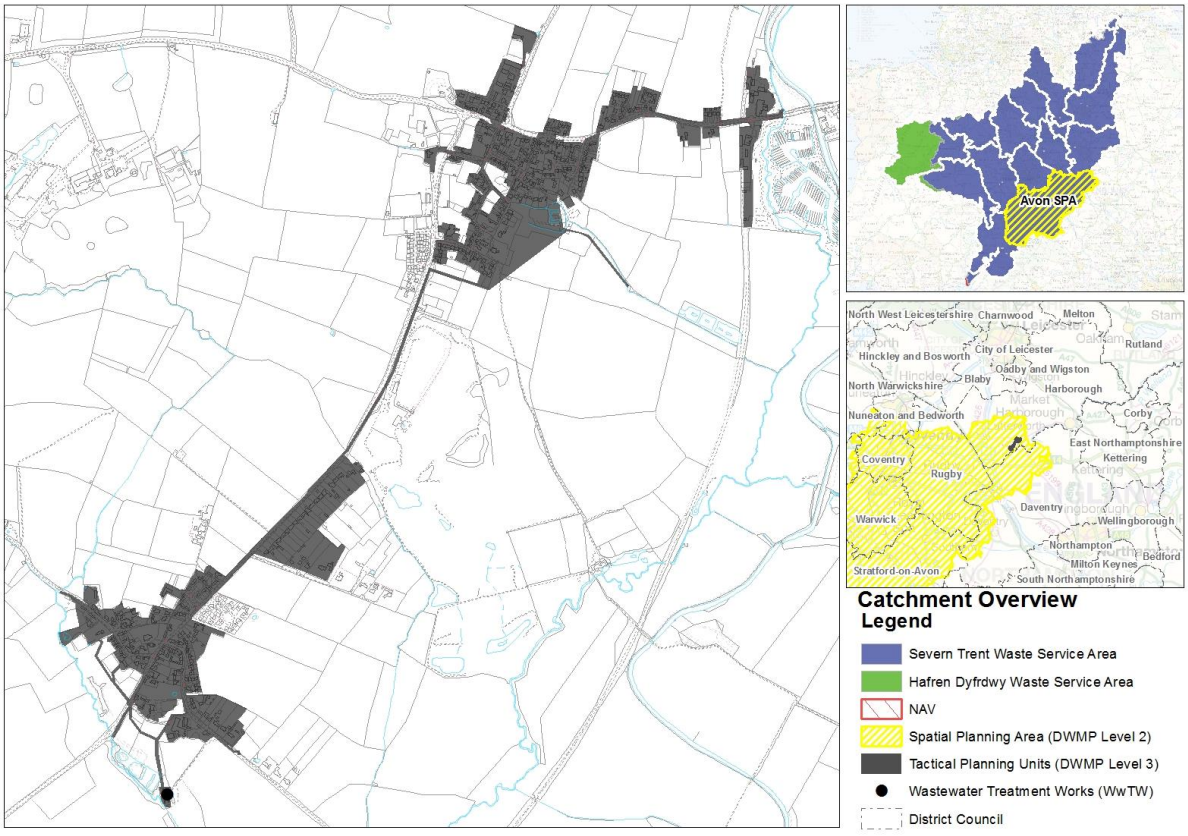


Figure 233 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".

Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 234 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 417 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	Yes
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 418 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 419 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 420 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	1	1	1	1	1	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	2	2	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 421 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	✓✓
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	•
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
STANTON (GLOUCESTERSHIRE) (10315)

March 2023

WONDERFUL ON TAP

Overview

Stanton (Gloucestershire) WwTW serves a residential population of 212. Treated effluent is discharged to the River Isbourne.

Key Statistics:

- Residential Population Served: 212
- This is our 538th largest catchment across the whole of Severn Trent, and the 103rd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 3.0km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

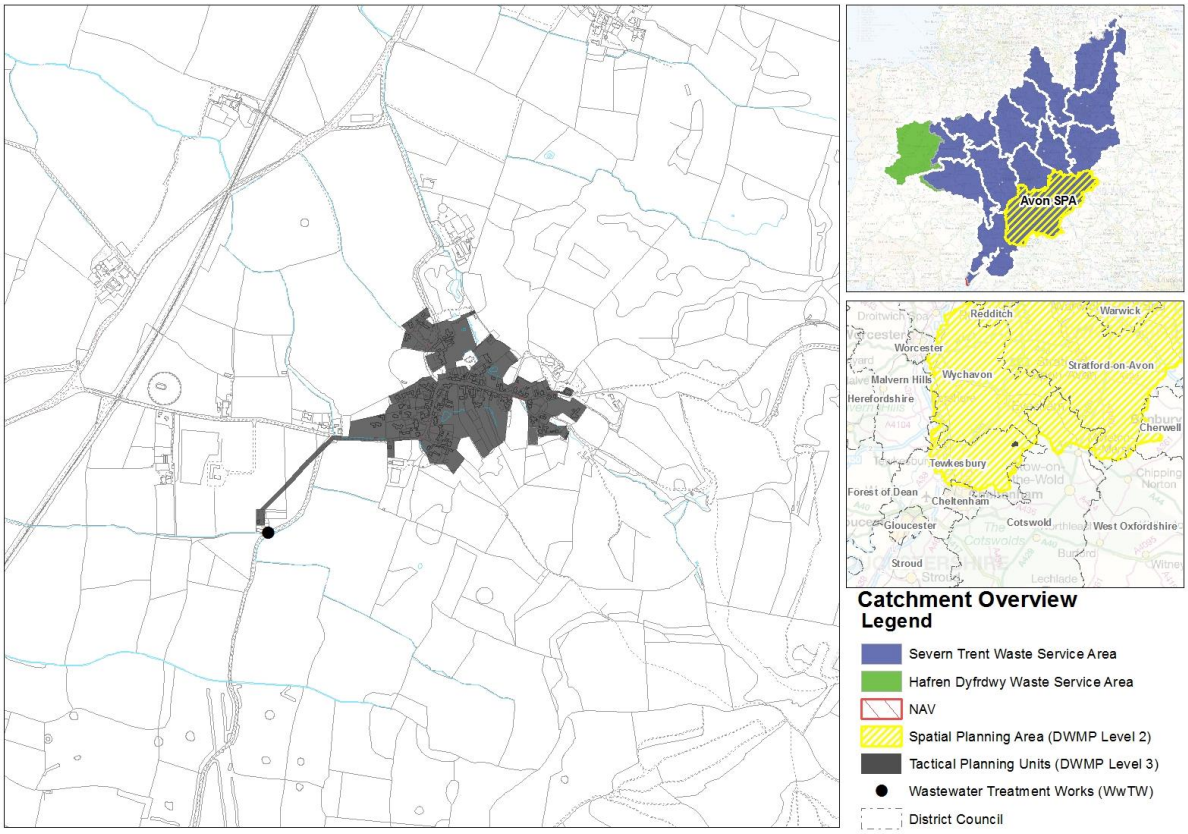
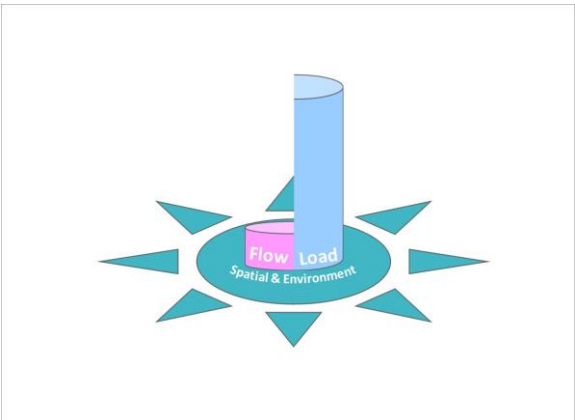


Figure 235 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 236 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 422 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
STAVERTON (10396)

March 2023

WONDERFUL ON TAP

Overview

Staverton WwTW serves a residential population of 608. Treated effluent is discharged to a tributary of the River Leam.

Key Statistics:

- Residential Population Served: 608
- This is our 393rd largest catchment across the whole of Severn Trent, and the 72nd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 16.3km of public foul water sewers and 1.1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

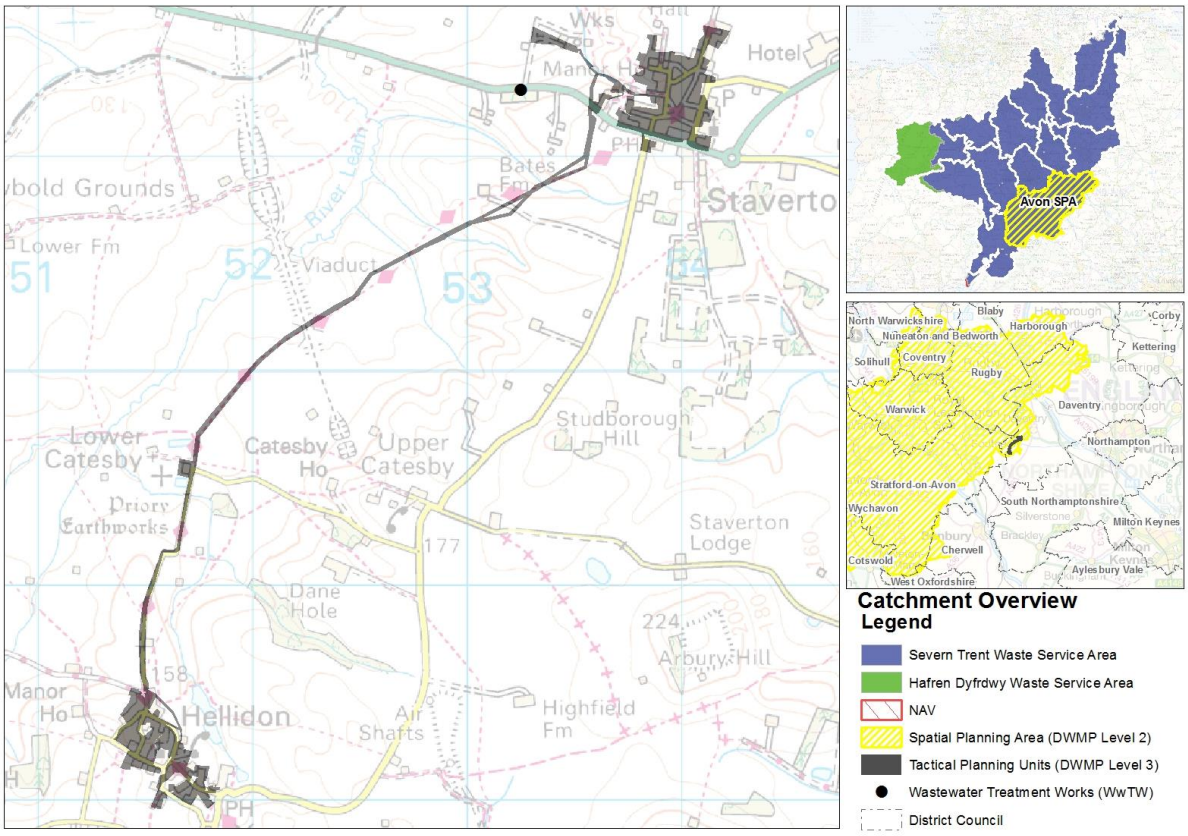
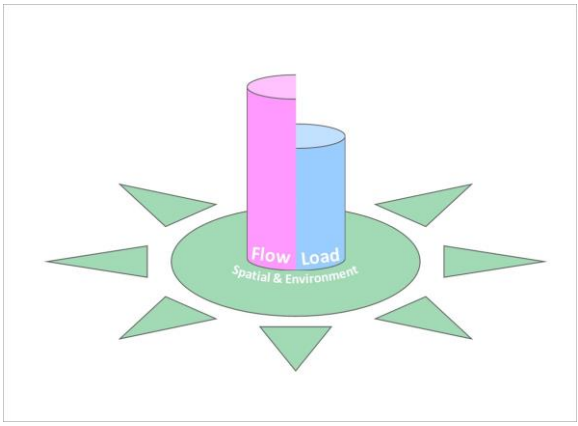


Figure 237 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 238 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 423 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
STOKE ORCHARD (10278)

March 2023

WONDERFUL ON TAP

Overview

Stoke Orchard WwTW is located to the north east of Elmstone Hardwicke and serves a residential population of 1,095. Treated effluent is discharged to the Hyde Brook. In addition to treating the flows from Elmstone Hardwicke, the catchment also drains the villages of Tredington (pumped), Stoke Orchard (pumped) and Hardwicke (pumped).

Key Statistics:

- Residential Population Served: 1,095
- This is our 316th largest catchment across the whole of Severn Trent, and the 47th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 25.8km of public foul water sewers and 2.5km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

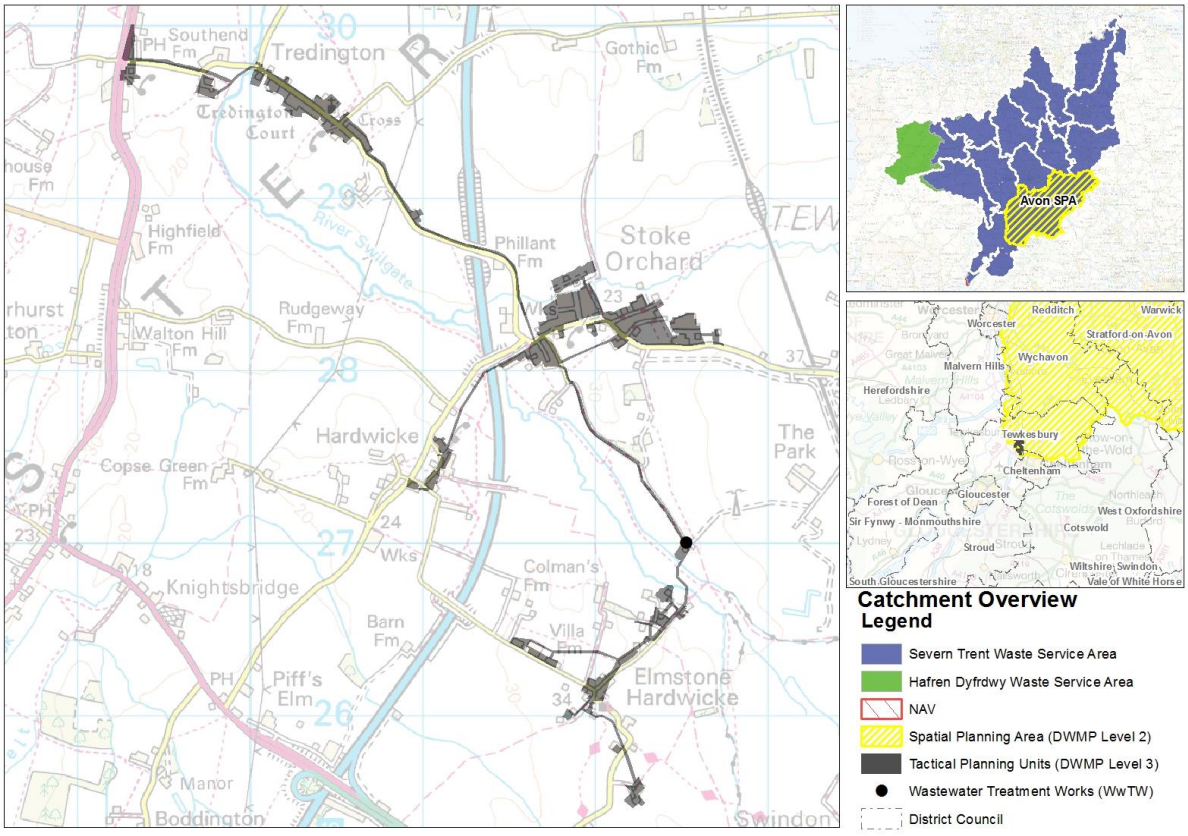
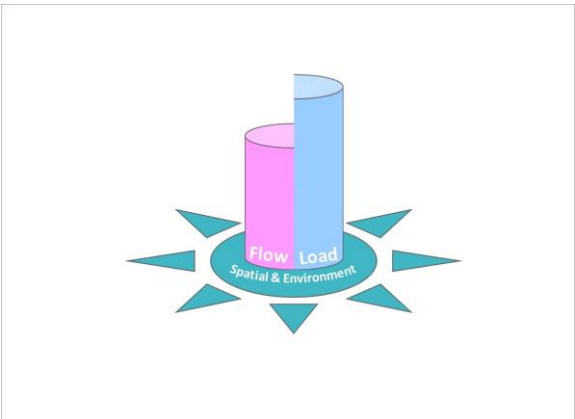


Figure 239 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 240 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 424 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 425 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 426 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 427 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	1	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 428 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
STOULTON (HAW BRIDGE) (10023)

March 2023

WONDERFUL ON TAP

Overview

Stoulton (Haw Bridge) WwTW serves a residential population of 184. Treated effluent is discharged to the Stoulton Brook.

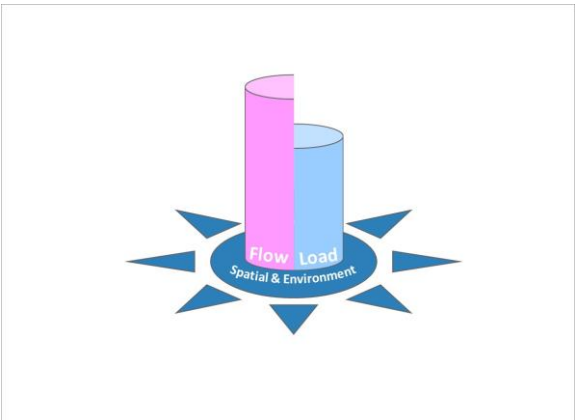
Key Statistics:

- Residential Population Served: 184
- This is our 560th largest catchment across the whole of Severn Trent, and the 110th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 3.3km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

Figure 241 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 242 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 429 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
STOULTON (WINDMILL LANE) (10042)

March 2023

WONDERFUL ON TAP

Overview

Stoulton (Windmill Lane) WwTW serves a residential population of 32. Treated effluent is discharged to a tributary of the Bow Brook.

Key Statistics:

- Residential Population Served: 32
- This is our 765th largest catchment across the whole of Severn Trent, and the 146th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has <1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

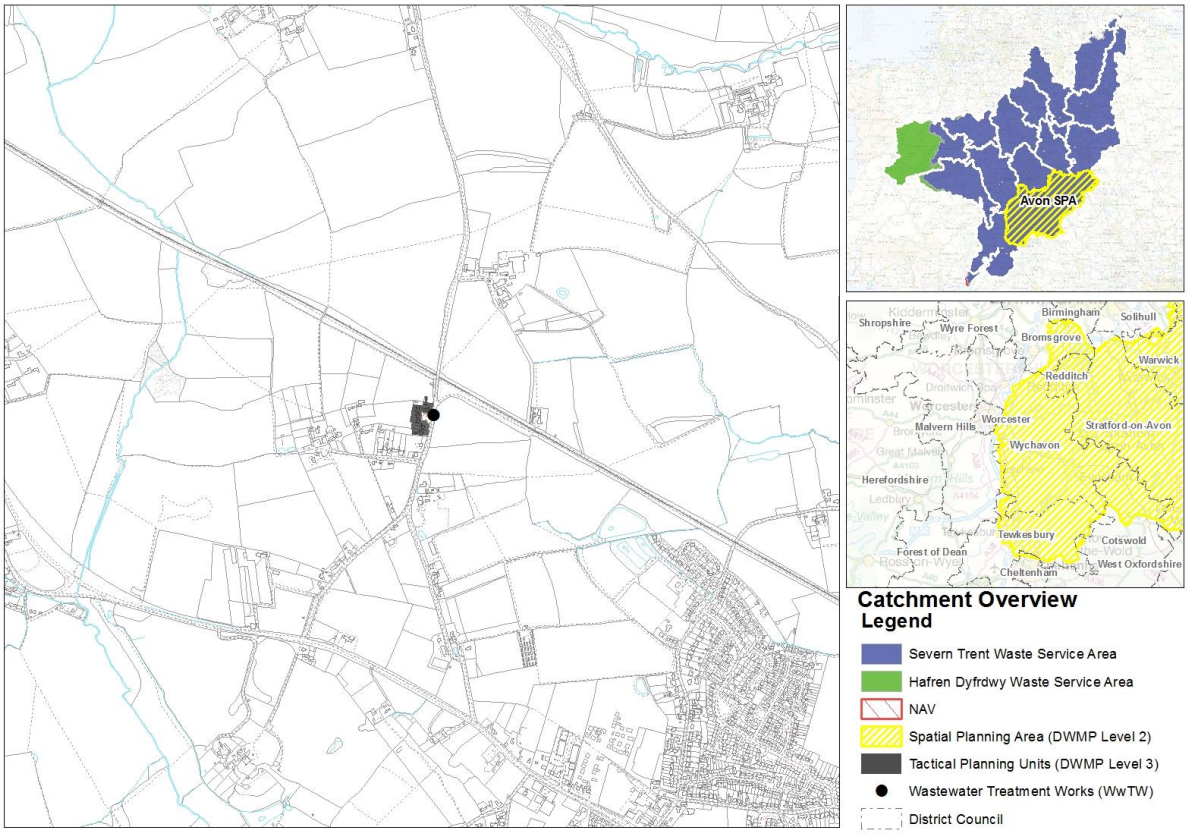
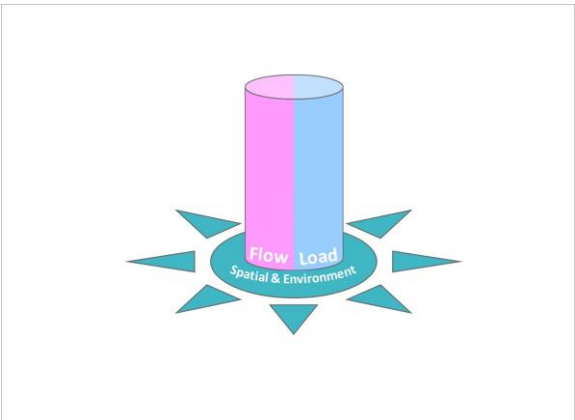


Figure 243 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 244 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 430 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
STRATFORD (MILCOTE) (10348)

March 2023

WONDERFUL ON TAP

Overview

Stratford (Milcote) WwTW is located to the south west of Stratford-upon-Avon and serves a residential population of 39,043. Treated effluent is discharged to the River Avon. In addition to treating flows from Stratford-upon-Avon, the catchment also drains the outlying villages of Clifford Chambers, Aston Cantlow, Alveston and Weston-upon-Avon (all pumped).

Key Statistics:

- Residential Population Served: 39,043
- This is our 47th largest catchment across the whole of Severn Trent, and the 5th largest in the Avon Stategic Planning Area making up 4% of its population.
- It has 328.4km of public foul water sewers and 107.8km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

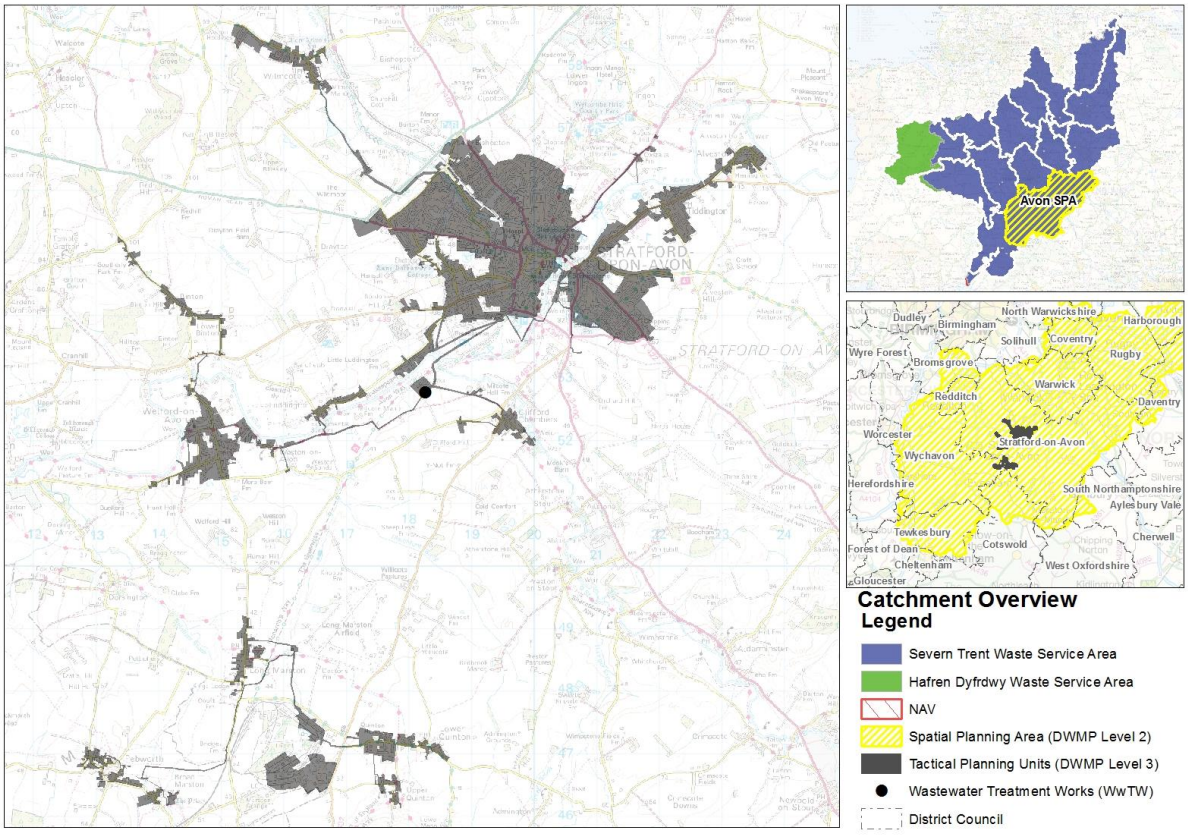


Figure 245 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".

Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 246 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 431 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	Yes
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 6 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 432 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 433 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 434 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	1	1	1	1	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 435 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	✓
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
STRENSHAM INTAKE (14491)

March 2023

WONDERFUL ON TAP

SEVERN
TRENT

Overview

Strensham Intake WwTW serves a residential population of 17. Treated effluent is discharged to the River Avon.

Key Statistics:

- Residential Population Served: 17
- This is our 825th largest catchment across the whole of Severn Trent, and the 148th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has <1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

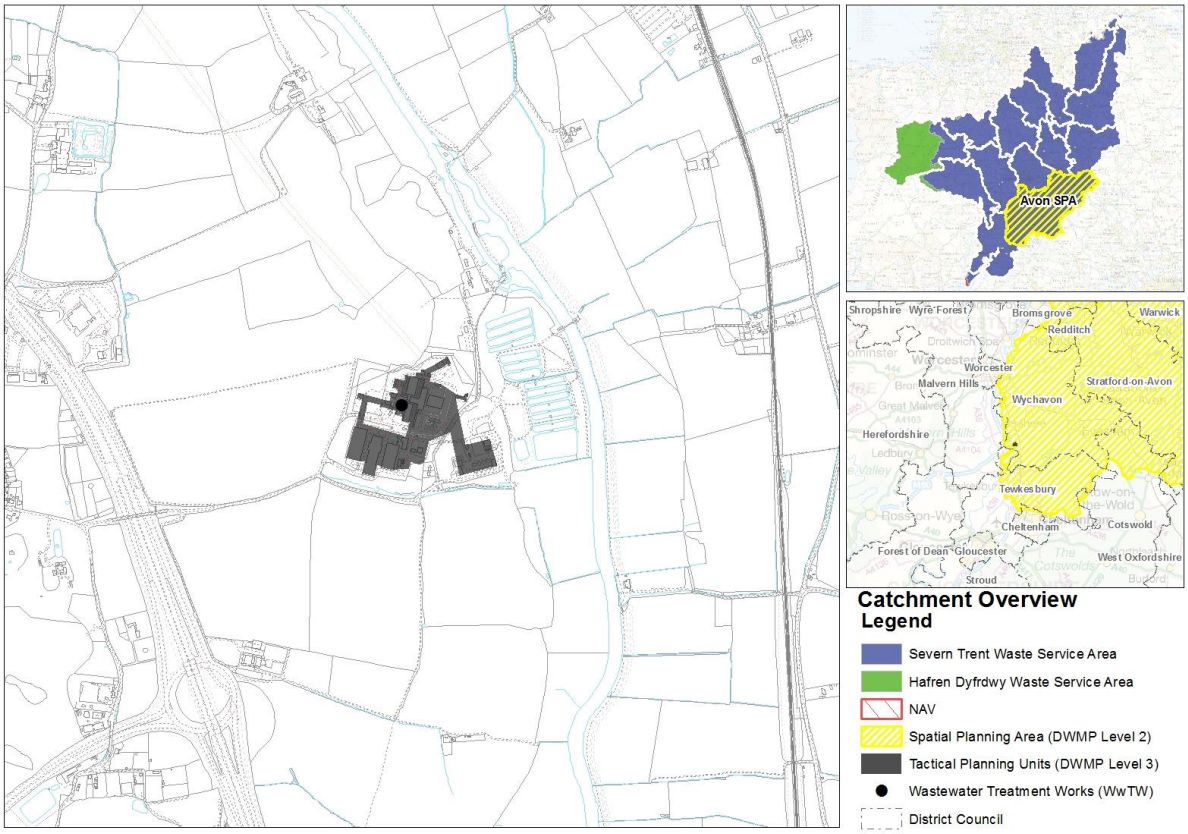
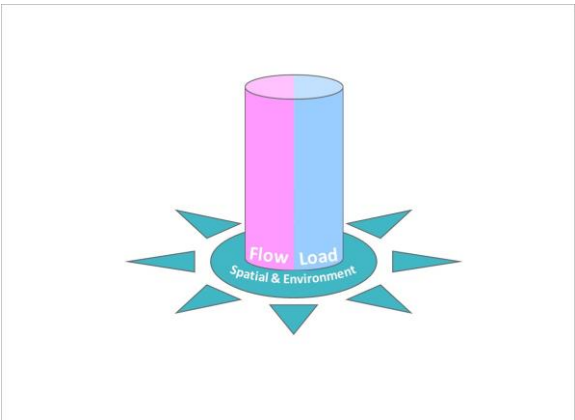


Figure 247 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 248 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 436 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
STRETTON-ON-FOSSE (10344)

March 2023

WONDERFUL ON TAP

Overview

Stretton-On-Fosse WwTW serves a residential population of 374. Treated effluent is discharged to a tributary of The Knee Brook.

Key Statistics:

- Residential Population Served: 374
- This is our 454th largest catchment across the whole of Severn Trent, and the 87th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 4.8km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

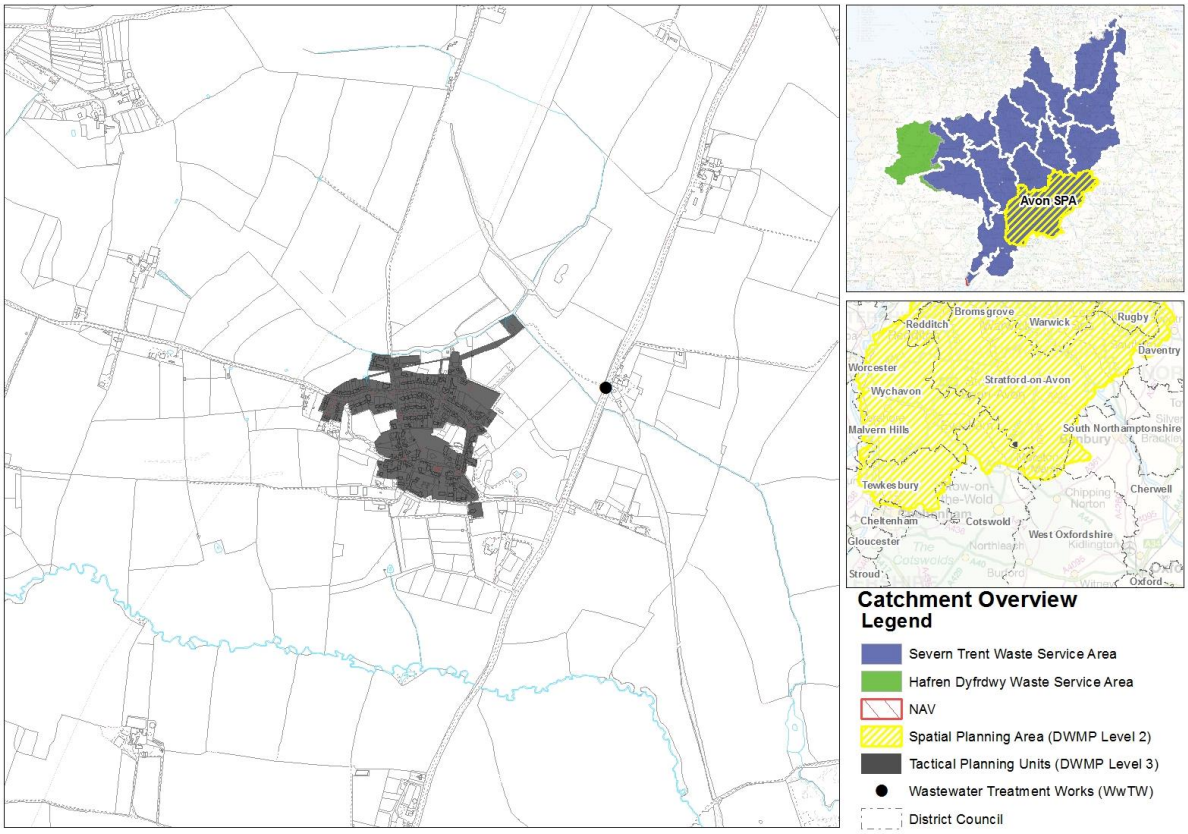
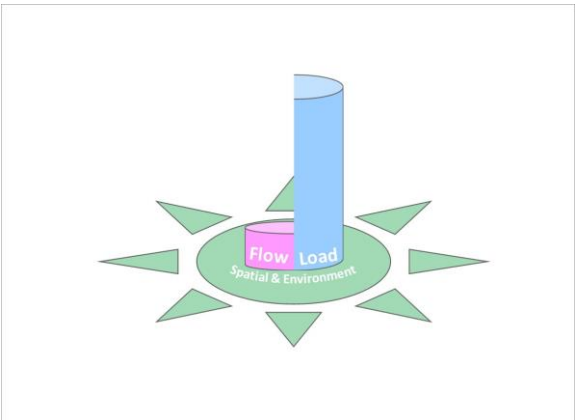


Figure 249 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 250 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 437 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

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Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: SWINFORD (11239)

March 2023

WONDERFUL ON TAP

Overview

Swinford WwTW is located to the south of the village of Swinford and serves a residential population of 590. Treated effluent is discharged to a tributary of the River Avon.

Key Statistics:

- Residential Population Served: 590
- This is our 405th largest catchment across the whole of Severn Trent, and the 74th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 5.5km of public foul water sewers and 3.1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

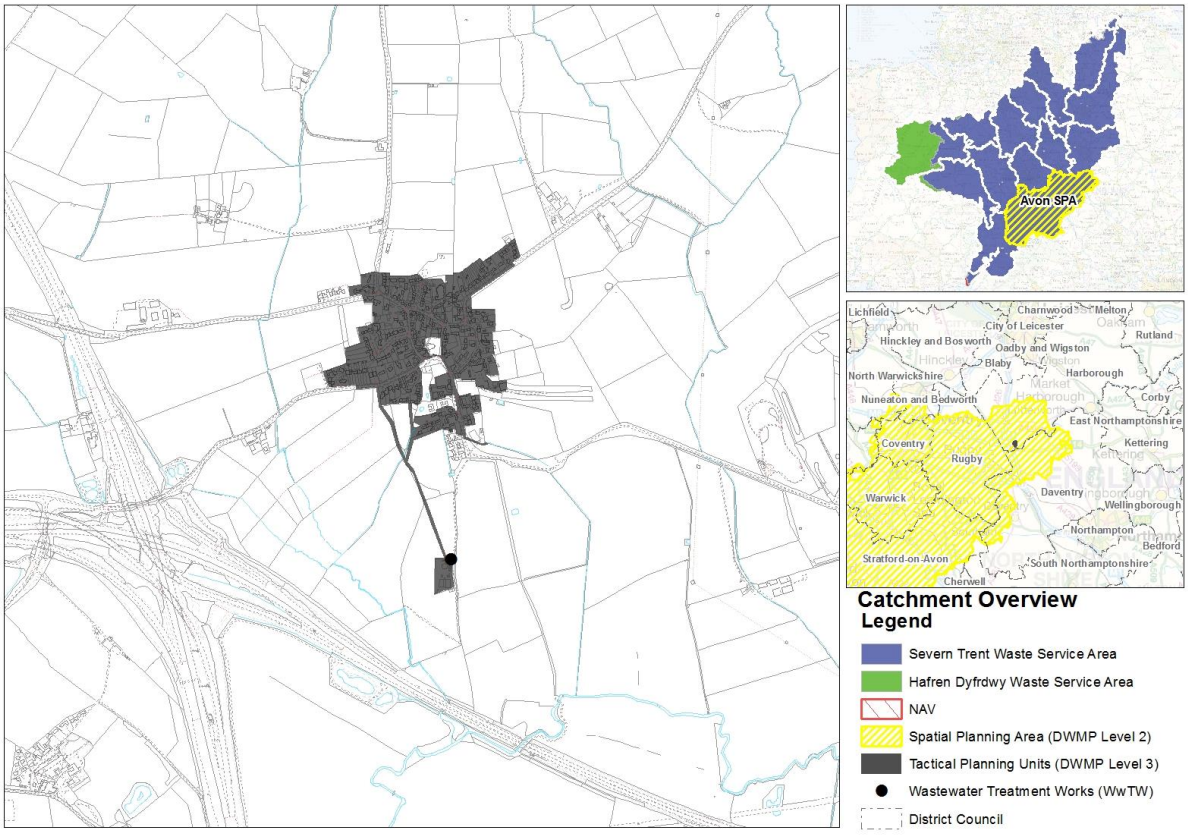
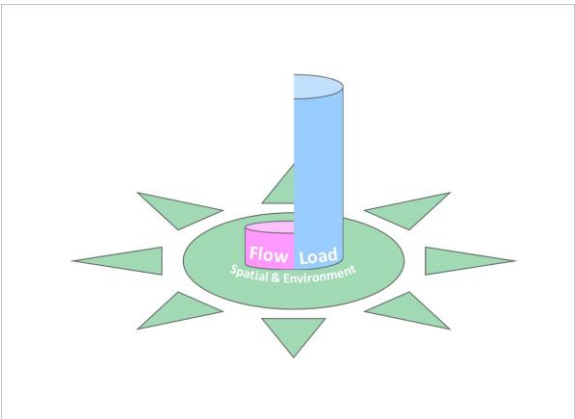


Figure 251 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



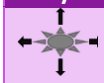
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 252 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 438 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	Yes
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 439 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 440 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 441 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	2	2	2	2	2	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	2	2	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 442 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	•
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	•
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	•
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
TANWORTH-IN-ARDEN (10328)

March 2023

WONDERFUL ON TAP

Overview

Tanworth-In-Arden WwTW is located to the south of Tanworth-in-Arden and serves a residential population of 300. Treated effluent is discharged to the River Alne.

Key Statistics:

- Residential Population Served: 300
- This is our 483rd largest catchment across the whole of Severn Trent, and the 96th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 7.3km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

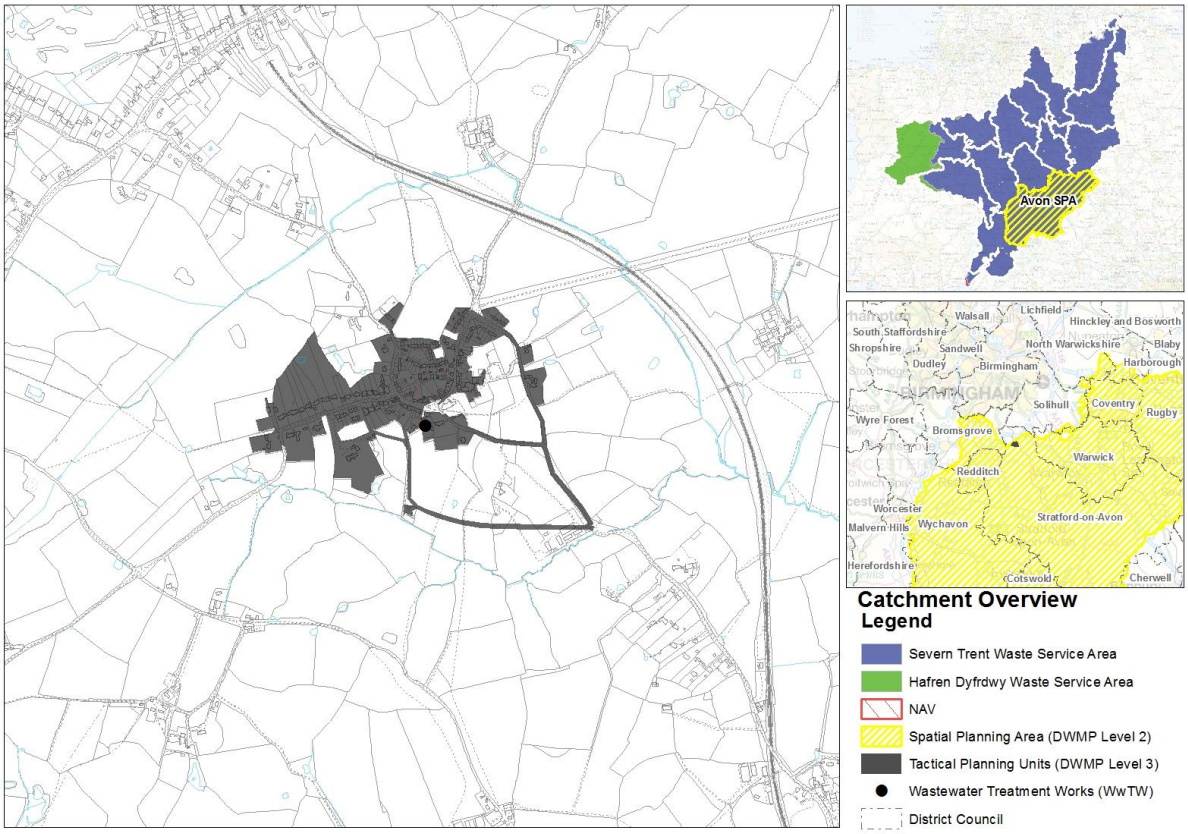
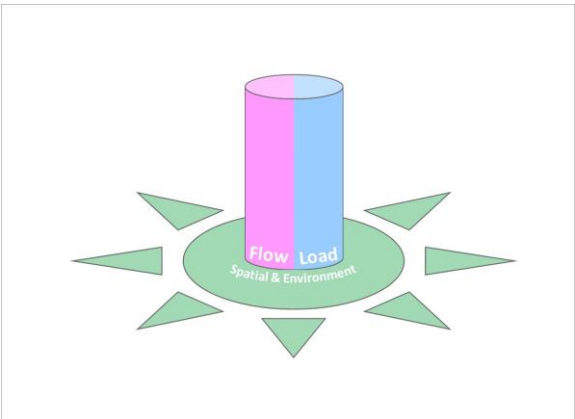


Figure 253 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 254 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 443 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	Yes
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 444 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 445 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 446 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 447 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
TARDEBIGGE (18649)

March 2023

WONDERFUL ON TAP

Overview

Tardebigge WwTW serves a residential population of 5. Treated effluent is discharged locally.

Key Statistics:

- Residential Population Served: 5
- This is our 922nd largest catchment across the whole of Severn Trent, and the 150th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has <1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

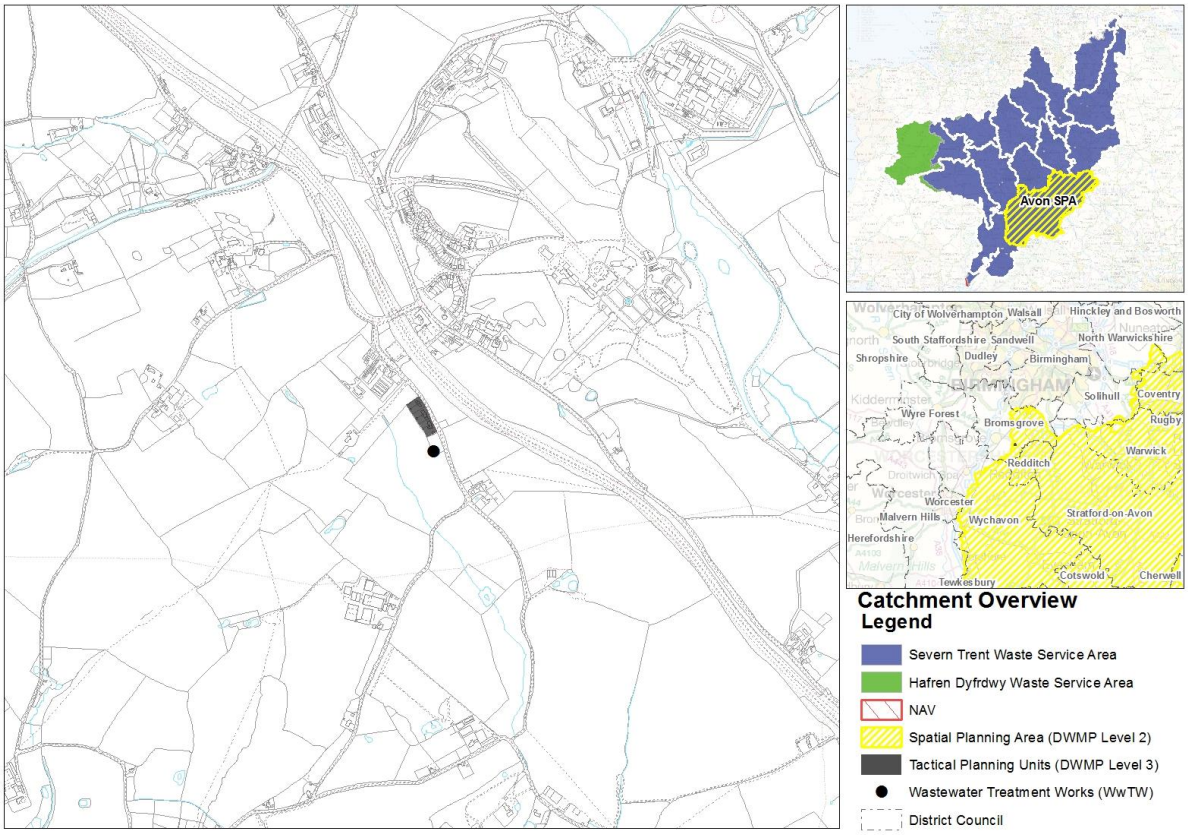
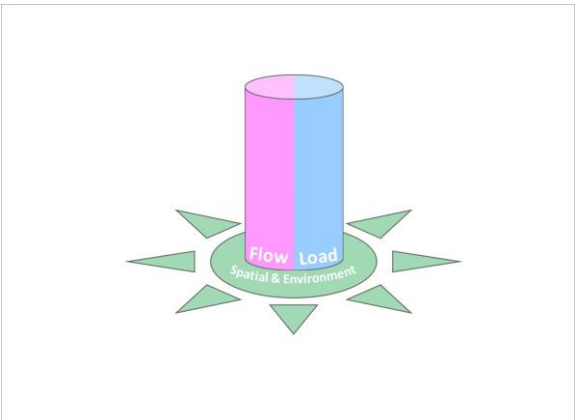


Figure 255 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



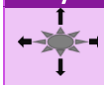
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 256 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 448 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
TEWKESBURY (LINCOLN GREEN LANE) (18009)

March 2023

WONDERFUL ON TAP

Overview

Tewkesbury (Lincoln Green Lane) WwTW serves a residential population of 21. Treated effluent is discharged to the Bloody Meadow Brook.

Key Statistics:

- Residential Population Served: 21
- This is our 804th largest catchment across the whole of Severn Trent, and the 147th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has <1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

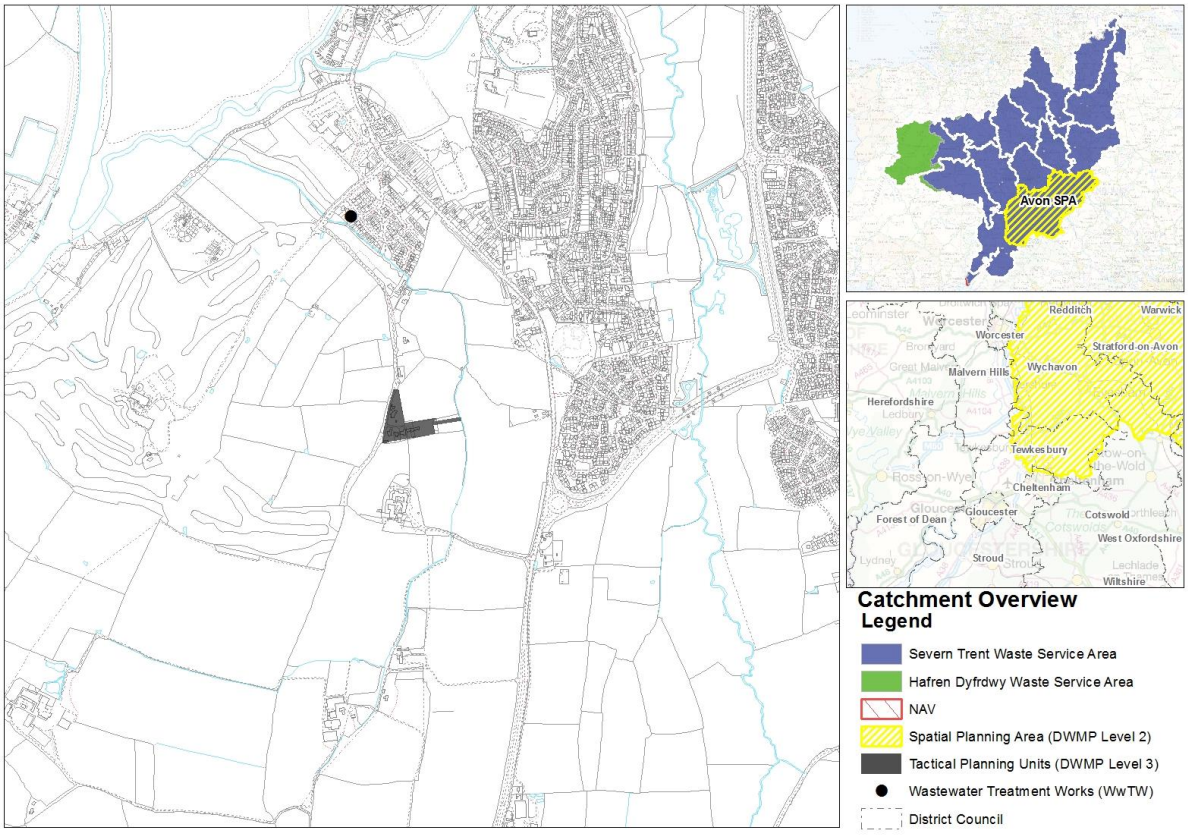
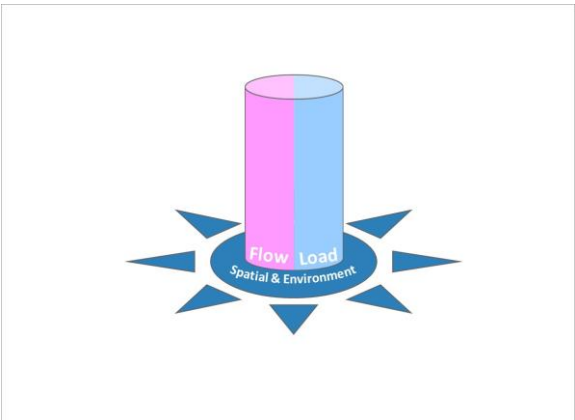


Figure 257 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 258 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 449 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
TEWKESBURY (10313)

March 2023

WONDERFUL ON TAP

Overview

Tewkesbury WwTW is located to the west of the town of Tewkesbury and serves a residential population of 23,580. Treated effluent is discharged to the Mill Avon. In addition to treating flows from Tewkesbury, the catchment also drains the outlying areas of Ashchurch to the west (pumped), Aston-on-Carrant to the west (pumped) and Pamington to the west (pumped)

Key Statistics:

- Residential Population Served: 23,580
- This is our 66th largest catchment across the whole of Severn Trent, and the 7th largest in the Avon Stategic Planning Area making up 2% of its population.
- It has 126.9km of public foul water sewers and 53.8km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

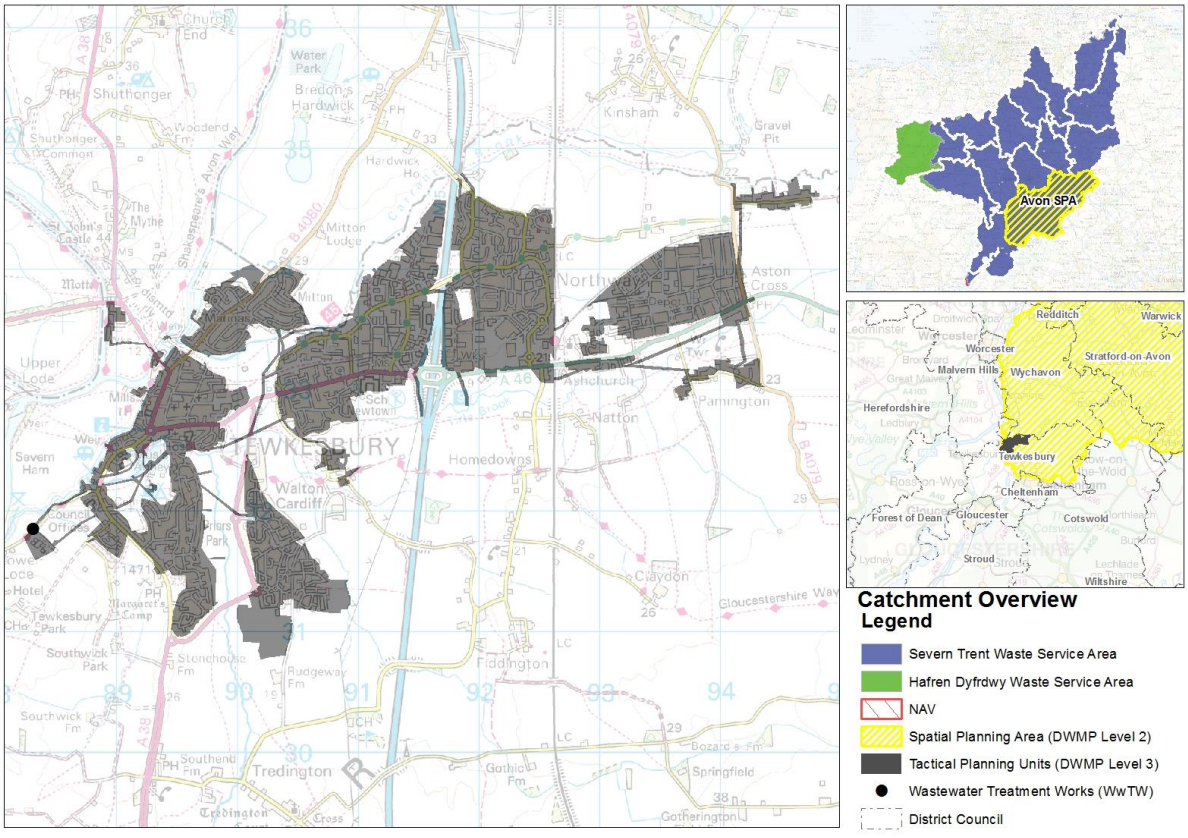


Figure 259 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".

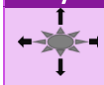
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 260 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 450 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	Yes
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	Yes
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
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17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 6 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 451 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 452 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 453 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	1	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	1	1	1	1	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 454 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	•
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
THROCKMORTON (10043)

March 2023

WONDERFUL ON TAP

Overview

Throckmorton WwTW is located to the north of Throckmorton and serves a residential population of 100. Treated effluent is discharged to a tributary of the Piddle Brook.

Key Statistics:

- Residential Population Served: 100
- This is our 629th largest catchment across the whole of Severn Trent, and the 126th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 1.8km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

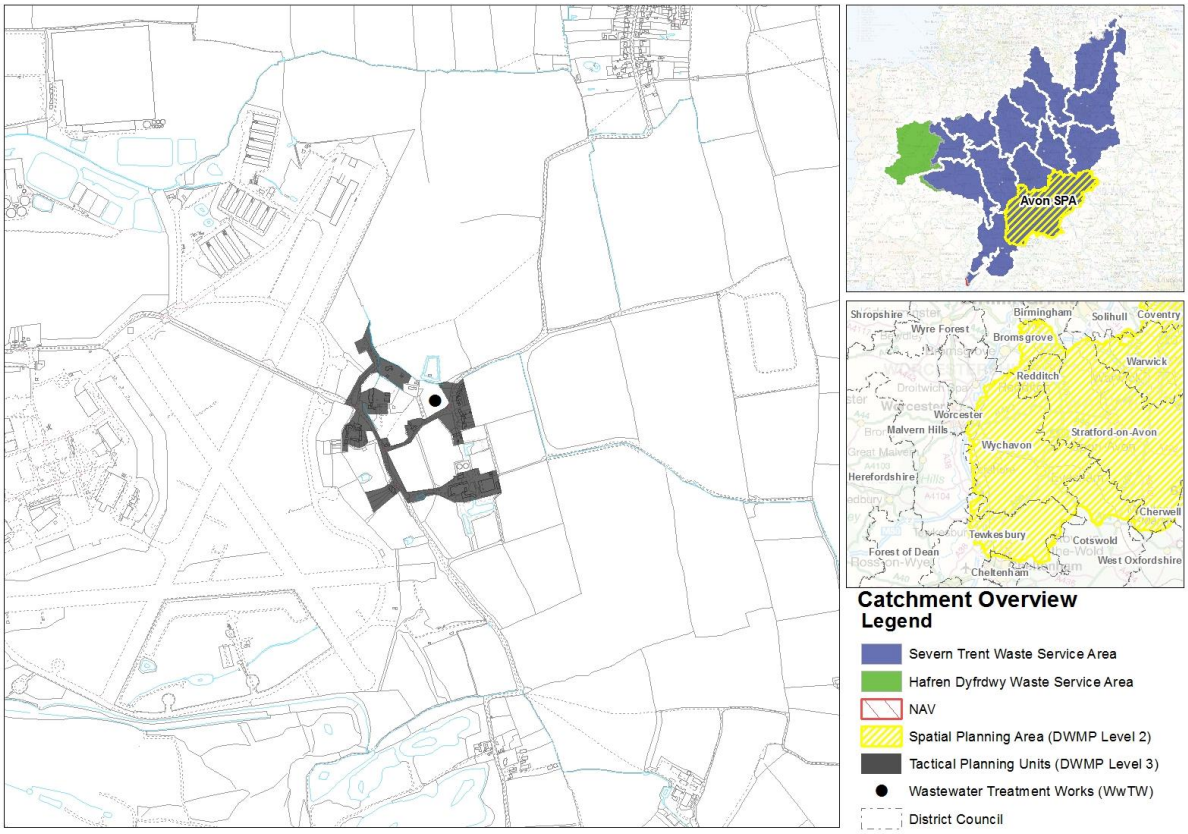
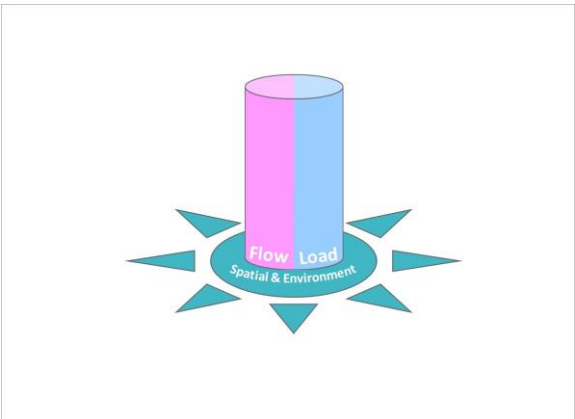


Figure 261 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



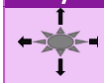
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 262 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 455 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 456 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 457 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 458 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	N/A	N/A	N/A	N/A	N/A	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 459 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	•
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
TILESFORD PARK (10024)

March 2023

WONDERFUL ON TAP

Overview

Tilesford Park WwTW serves a residential population of 76. Treated effluent is discharged to the Piddle Brook.

Key Statistics:

- Residential Population Served: 76
- This is our 671st largest catchment across the whole of Severn Trent, and the 135th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has <1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

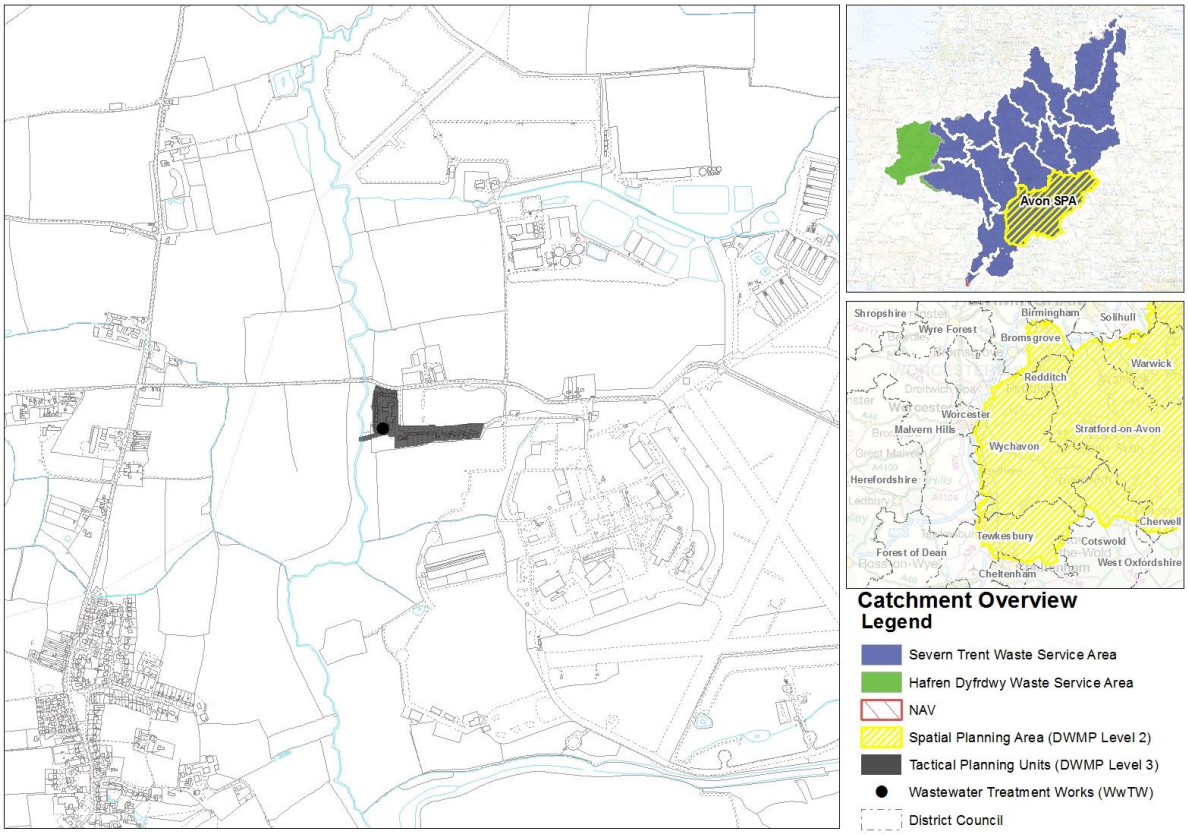
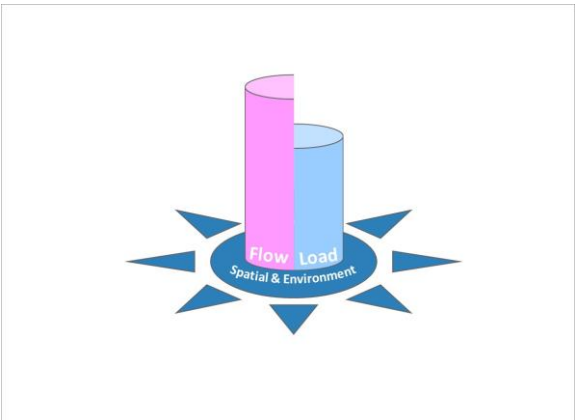


Figure 263 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 264 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 460 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
TODDINGTON (10302)

March 2023

WONDERFUL ON TAP

Overview

Toddington WwTW is located to the north of Toddington and serves a residential population of 343. Treated effluent is discharged to the River Isbourne. Only the flows from Toddington village drain to the treatment works.

Key Statistics:

- Residential Population Served: 343
- This is our 469th largest catchment across the whole of Severn Trent, and the 93rd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 7.1km of public foul water sewers and 2.8km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

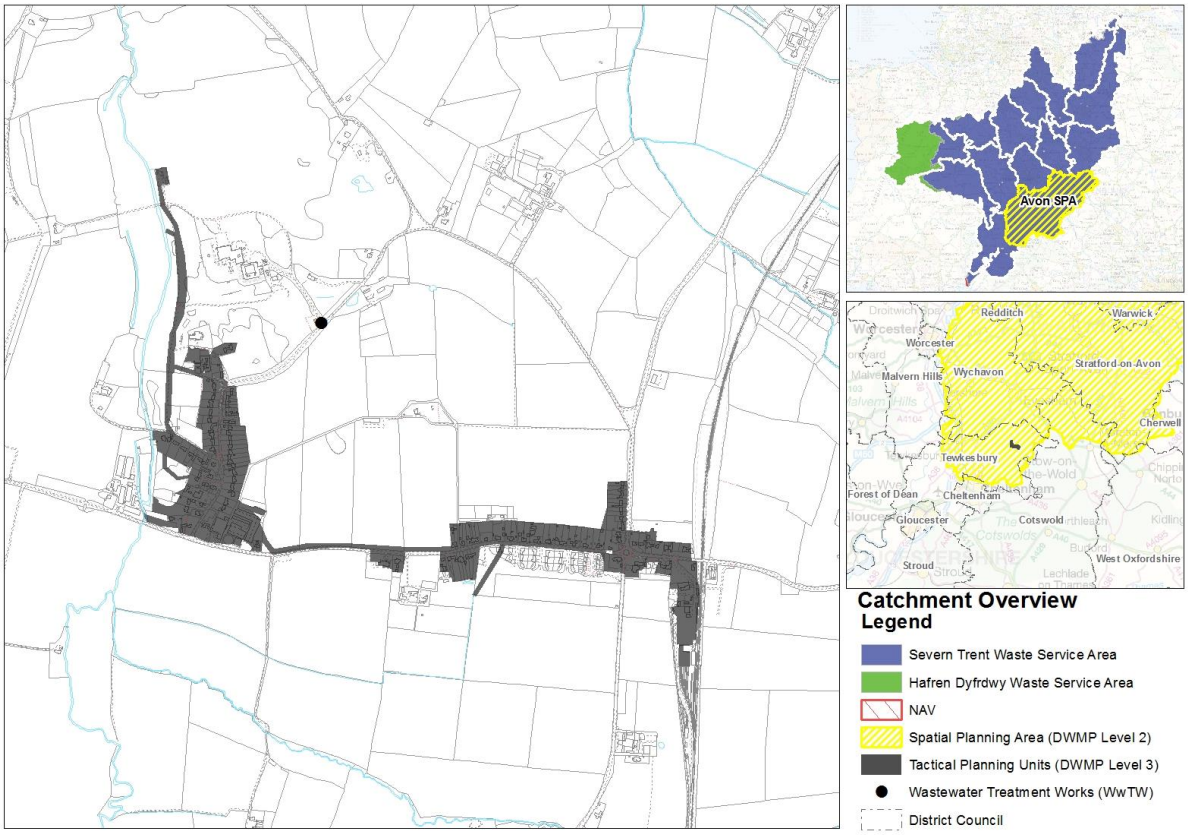
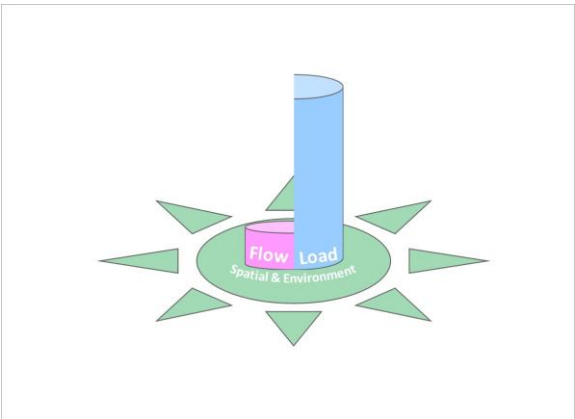


Figure 265 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 266 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 461 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
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Due to this catchment triggering on 5 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 462 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 463 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 464 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	2	2	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 465 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	✓
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: TWYNING (10044)

March 2023

WONDERFUL ON TAP

Overview

Twyning WwTW is located to the east of the village of Twyning and serves a population of 1,544. Treated effluent is discharged to a tributary of the River Avon. In addition to treating flows from Twyning, the catchment also drains several small villages including Churchend and Shuthonger which are all pumped into the Twyning catchment.

Key Statistics:

- Residential Population Served: 1,544
- This is our 280th largest catchment across the whole of Severn Trent, and the 39th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 19.9km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

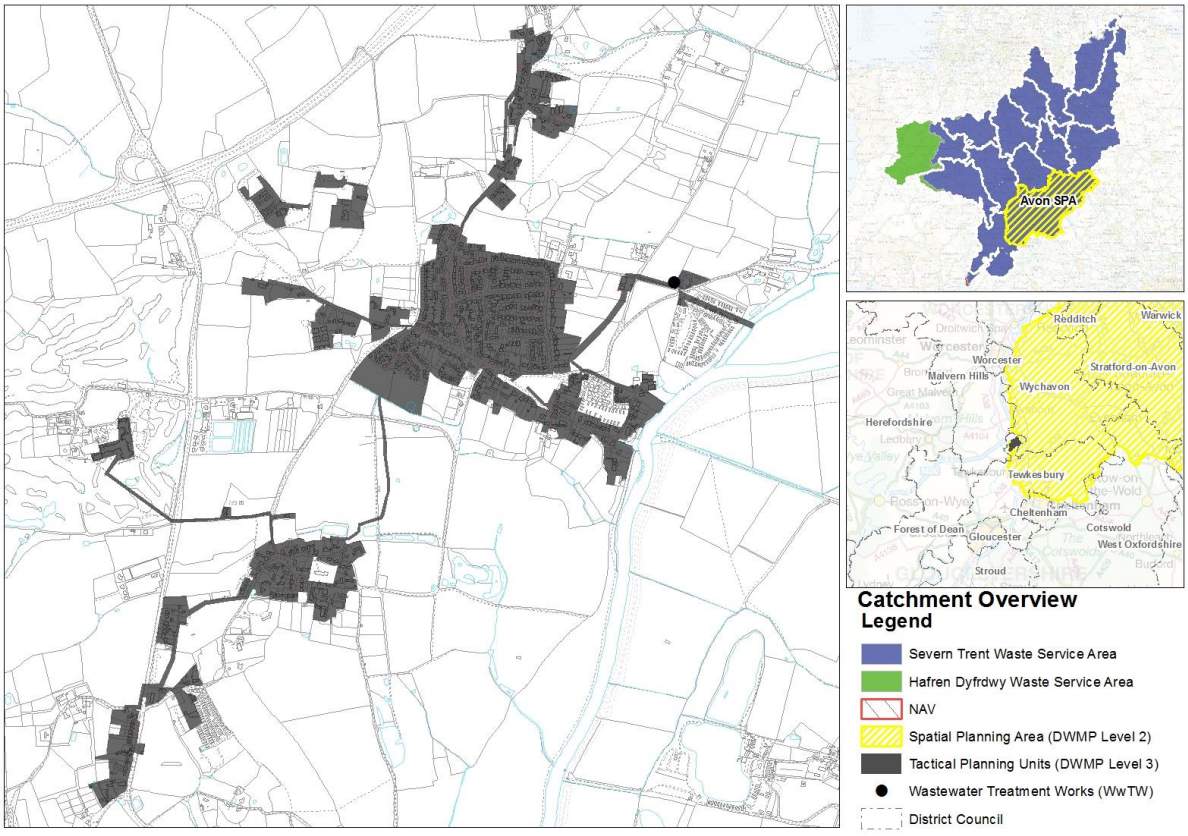
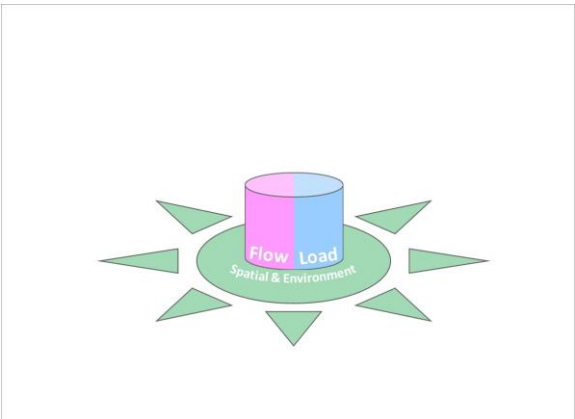


Figure 267 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



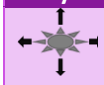
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 268 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 466 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 467 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 468 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 469 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	2	2	2	2	2	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 470 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	✓
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: TYSOE (10345)

March 2023

WONDERFUL ON TAP

Overview

Tysoe WwTW is located to the north west of Tysoe and serves a residential population of 955. Treated effluent is discharged to a tributary of the Wyngates Brook.

Key Statistics:

- Residential Population Served: 955
- This is our 336th largest catchment across the whole of Severn Trent, and the 53rd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 16.5km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

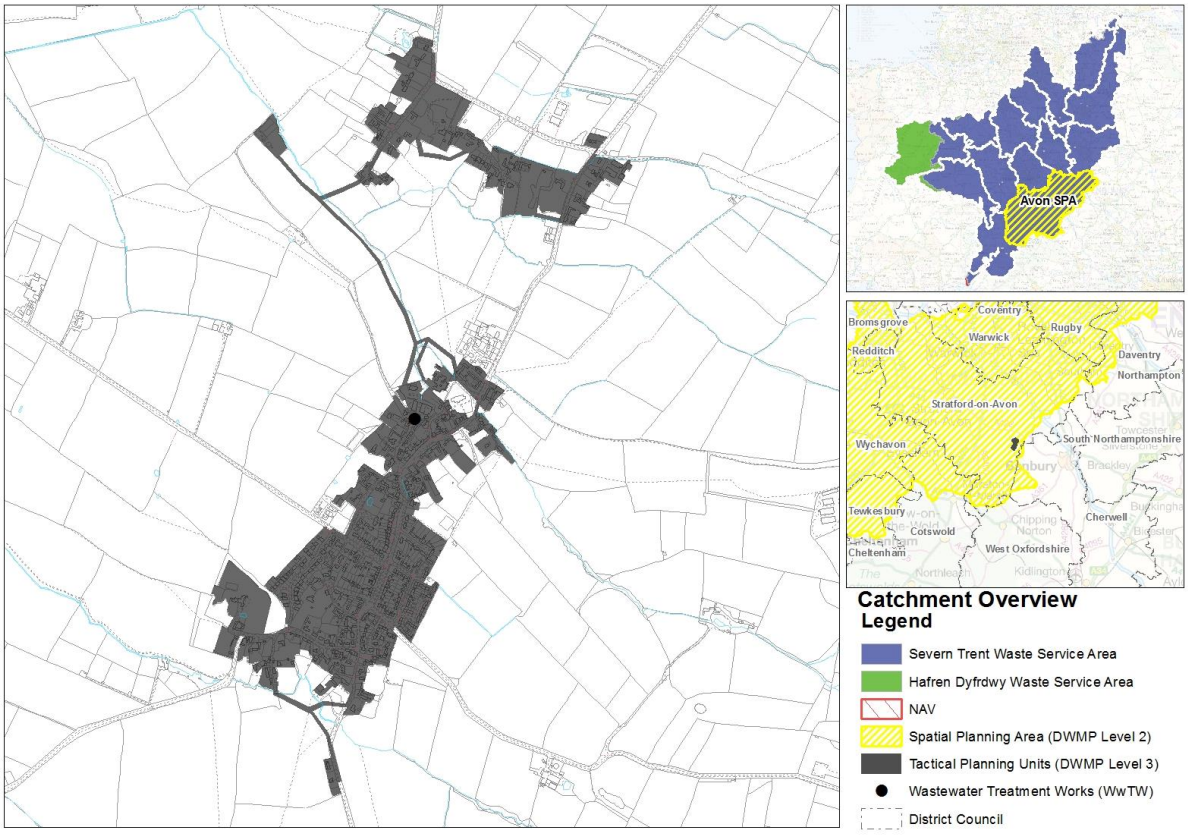
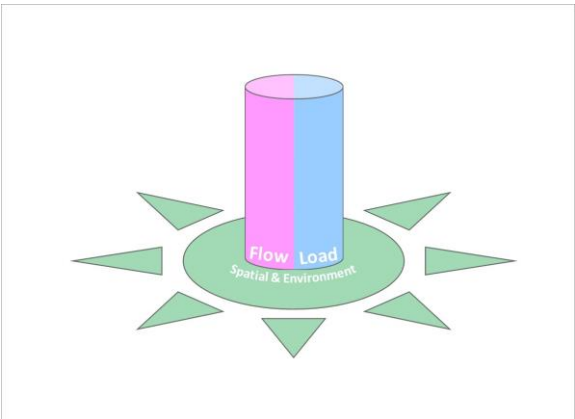


Figure 269 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 270 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 471 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 472 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 473 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 474 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 475 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: ULLENHALL (10346)

March 2023

WONDERFUL ON TAP

Overview

Ullenhall WwTW serves a residential population of 357. Treated effluent is discharged to the Ullenhall Brook, a tributary of the River Alne.

Key Statistics:

- Residential Population Served: 357
- This is our 463rd largest catchment across the whole of Severn Trent, and the 90th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 8.2km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

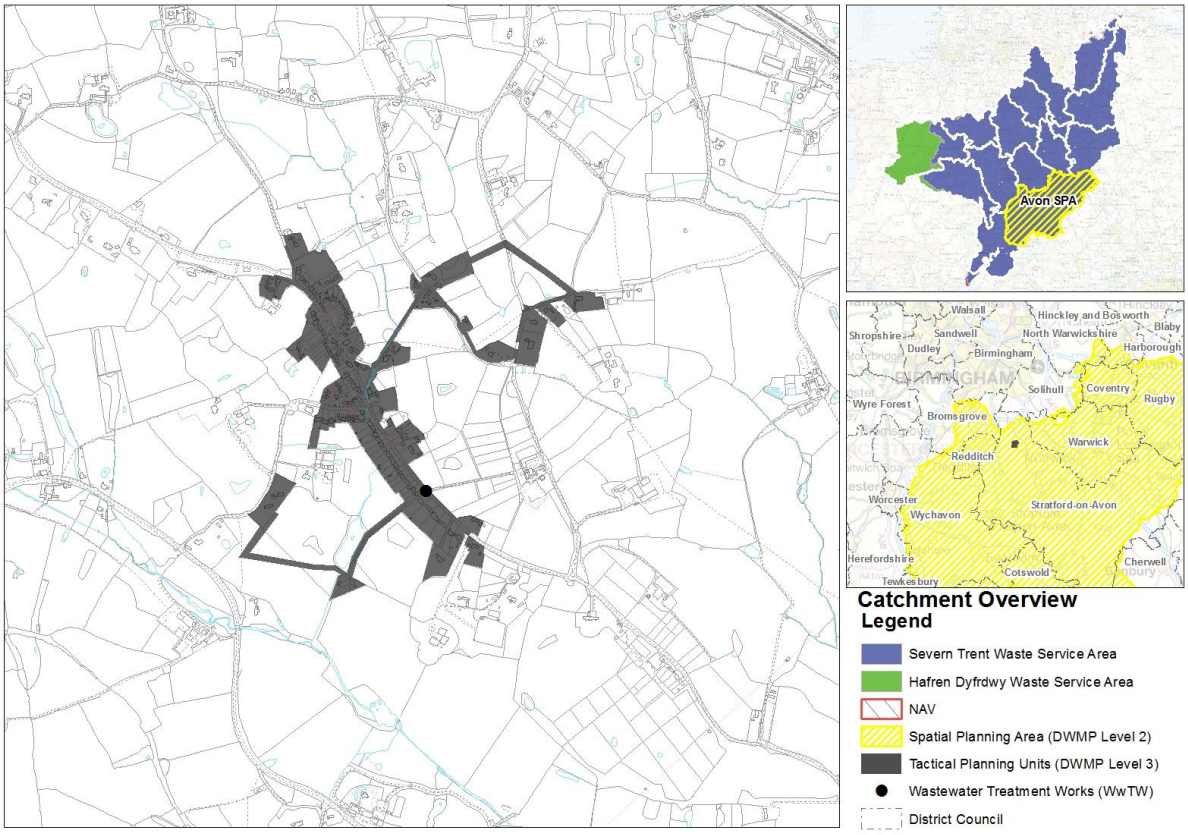
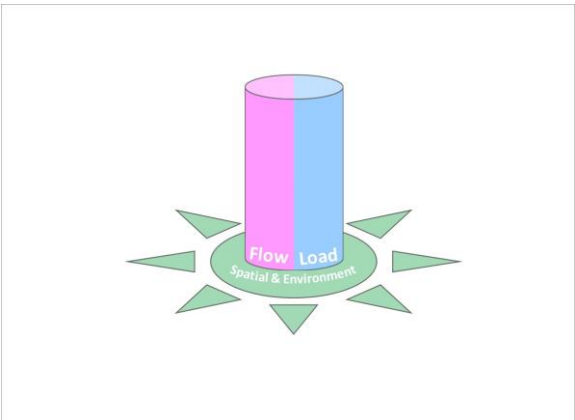


Figure 271 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 272 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 476 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
UPTON SNODSBURY (10084)

March 2023

WONDERFUL ON TAP

SEVERN
TRENT

Overview

Upton Snodsbury WwTW is located to the south west of Upton Snodsbury and serves a residential population of 297. Treated effluent is discharged to a tributary of the Piddle Brook.

Key Statistics:

- Residential Population Served: 297
- This is our 485th largest catchment across the whole of Severn Trent, and the 97th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 4.2km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

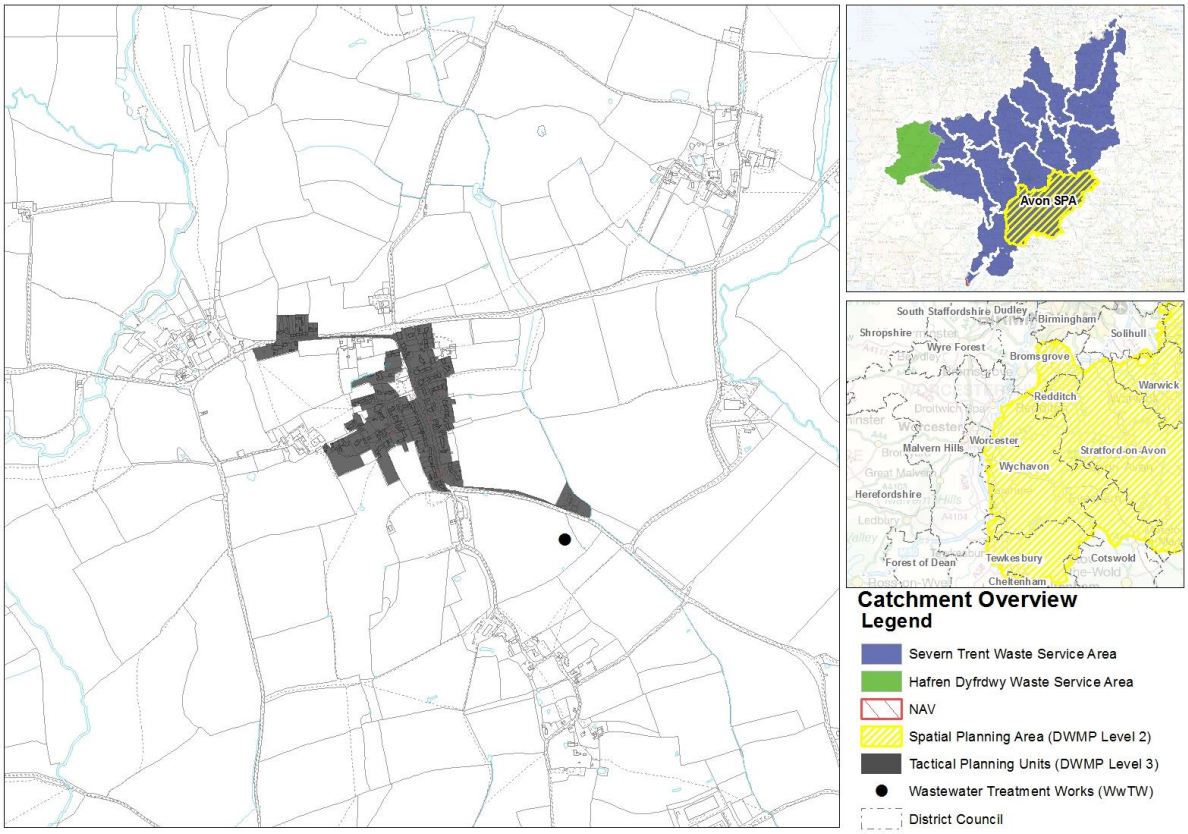
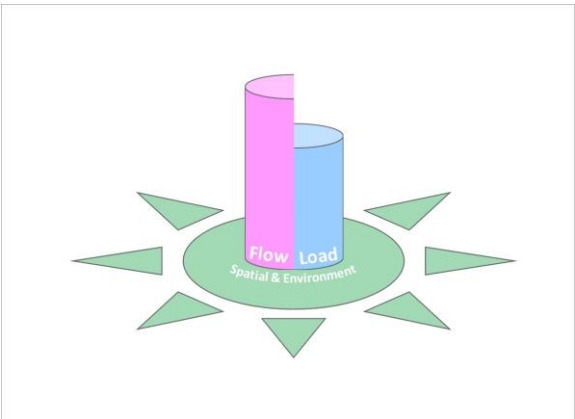


Figure 273 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



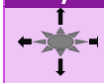
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
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Figure 274 Displays the Wastewater Treatment Works long term constraints.

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The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 477 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
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Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 478 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 479 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 480 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	1	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 481 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: WADBOROUGH (10045)

March 2023

WONDERFUL ON TAP

Overview

Wadborough WwTW is located to the north west of Wadborough and serves a residential population of 101. Treated effluent is discharged to the Bourne Brook.

Key Statistics:

- Residential Population Served: 101
- This is our 626th largest catchment across the whole of Severn Trent, and the 124th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has <1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

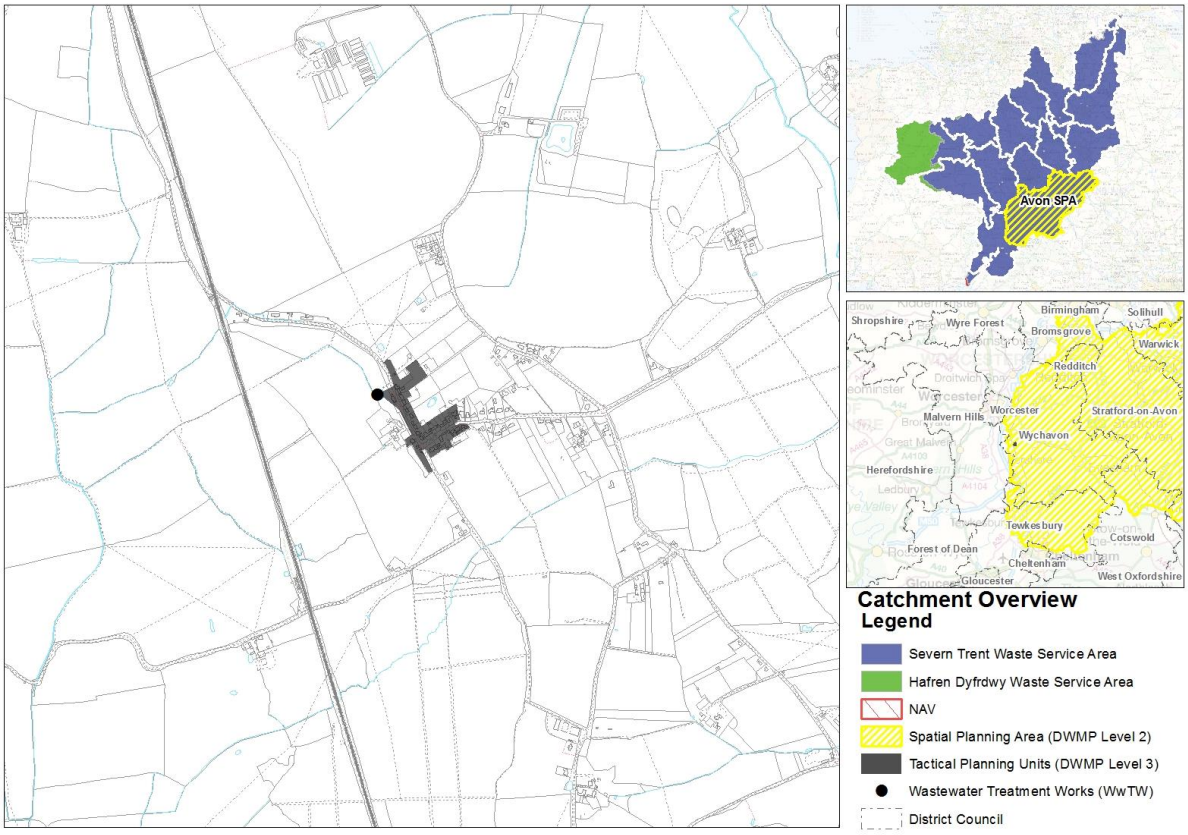
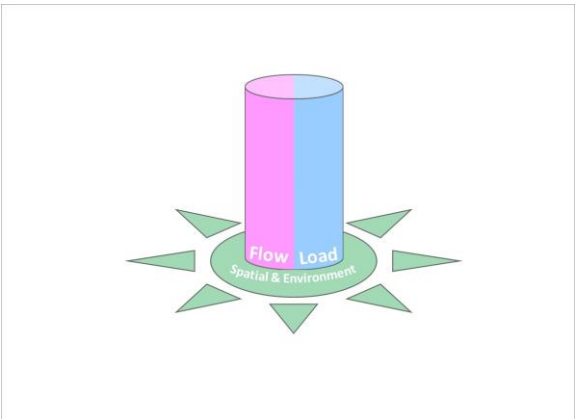


Figure 275 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



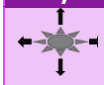
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 276 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 482 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 483 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 484 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 485 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	1	1	1	1	1	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	N/A	N/A	N/A	N/A	N/A	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 486 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

DWMP SEVERN TRENT
Drainage and Wastewater Management Plan

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
WARWICK (LONGBRIDGE) (10354)

March 2023

WONDERFUL ON TAP

SEVERN TRENT

Overview

Warwick (Longbridge) WwTW is located to the south west of Warwick centre and serves a residential population of 109,230. Treated effluent is discharged to the River Avon. In addition to treating flows from Warwick and Leamington Spa, the catchment also drains the outlying village of Barford to the south (pumped). The bulk of Warwick is a gravity system.

Key Statistics:

- Residential Population Served: 109,230
- This is our 17th largest catchment across the whole of Severn Trent, and the 2nd largest in the Avon Stategic Planning Area making up 10% of its population.
- It has 653.8km of public foul water sewers and 340.0km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

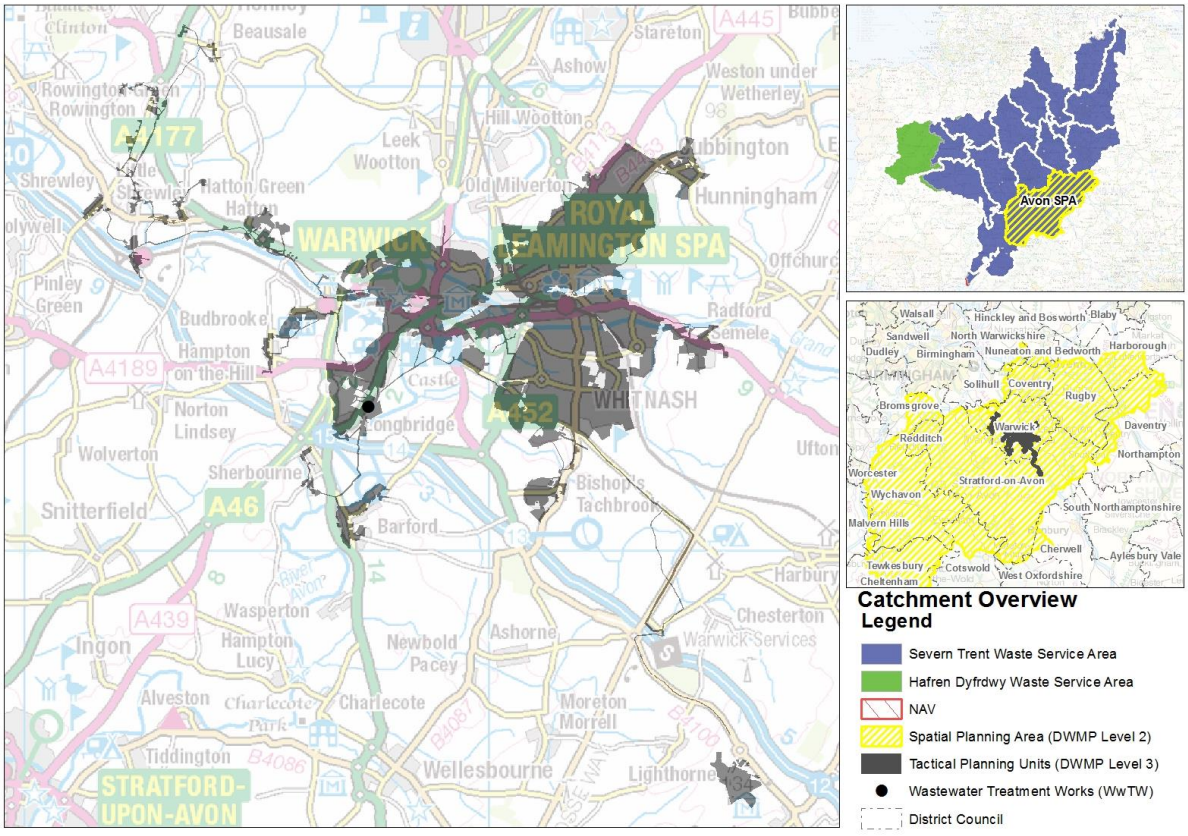
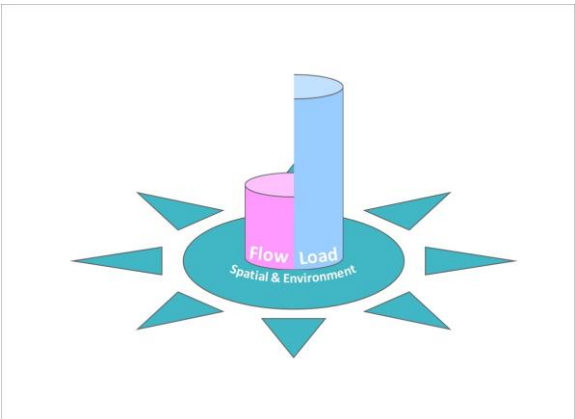


Figure 277 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 278 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 487 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	Yes
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	Yes
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 7 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 488 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 489 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 490 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	1	1	1	1	1	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	1	1	1	1	1	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	1	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 491 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
WELFORD (10398)

March 2023

WONDERFUL ON TAP

SEVERN TRENT

Overview

Welford WwTW is located to the north of Welford and serves a residential population of 1,151. Treated effluent is discharged to the River Avon.

Key Statistics:

- Residential Population Served: 1,151
- This is our 310th largest catchment across the whole of Severn Trent, and the 44th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 9.7km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

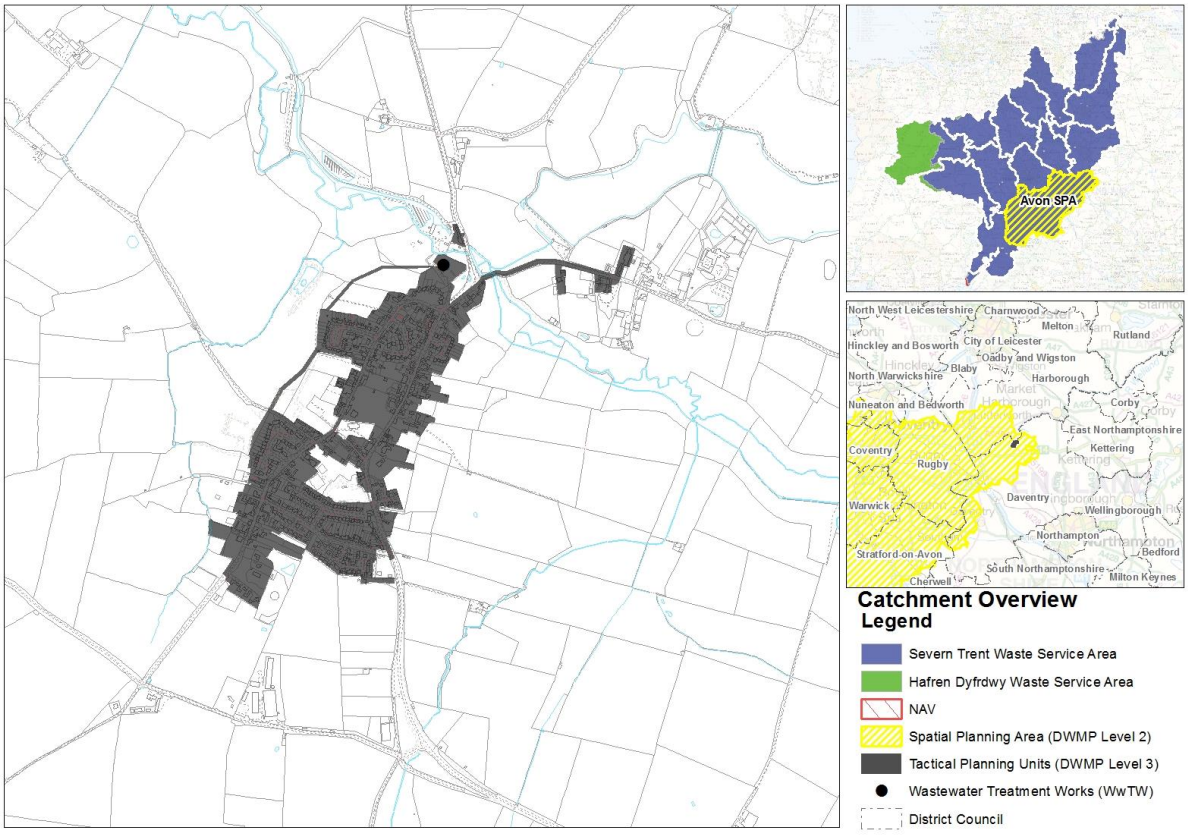
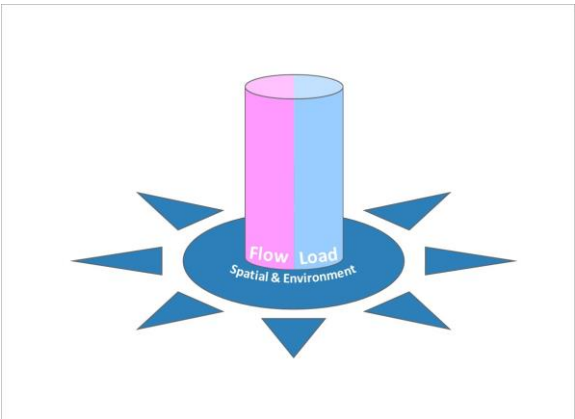


Figure 279 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 280 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 492 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 493 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 494 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 495 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	0	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 496 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓✓✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	•
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	•
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
WELLESBOURNE (10355)

March 2023

WONDERFUL ON TAP

Overview

Wellesbourne WwTW is located in the extreme south west of catchment and serves a residential population of 6,951. Treated effluent is discharged locally. In addition to treating flows from Wellesbourne, the catchment also drains the outlying village of Loxley to South (pumped) and Charlecotte to the North (pumped).

Key Statistics:

- Residential Population Served: 6,951
- This is our 150th largest catchment across the whole of Severn Trent, and the 19th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 61.1km of public foul water sewers and 19.2km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

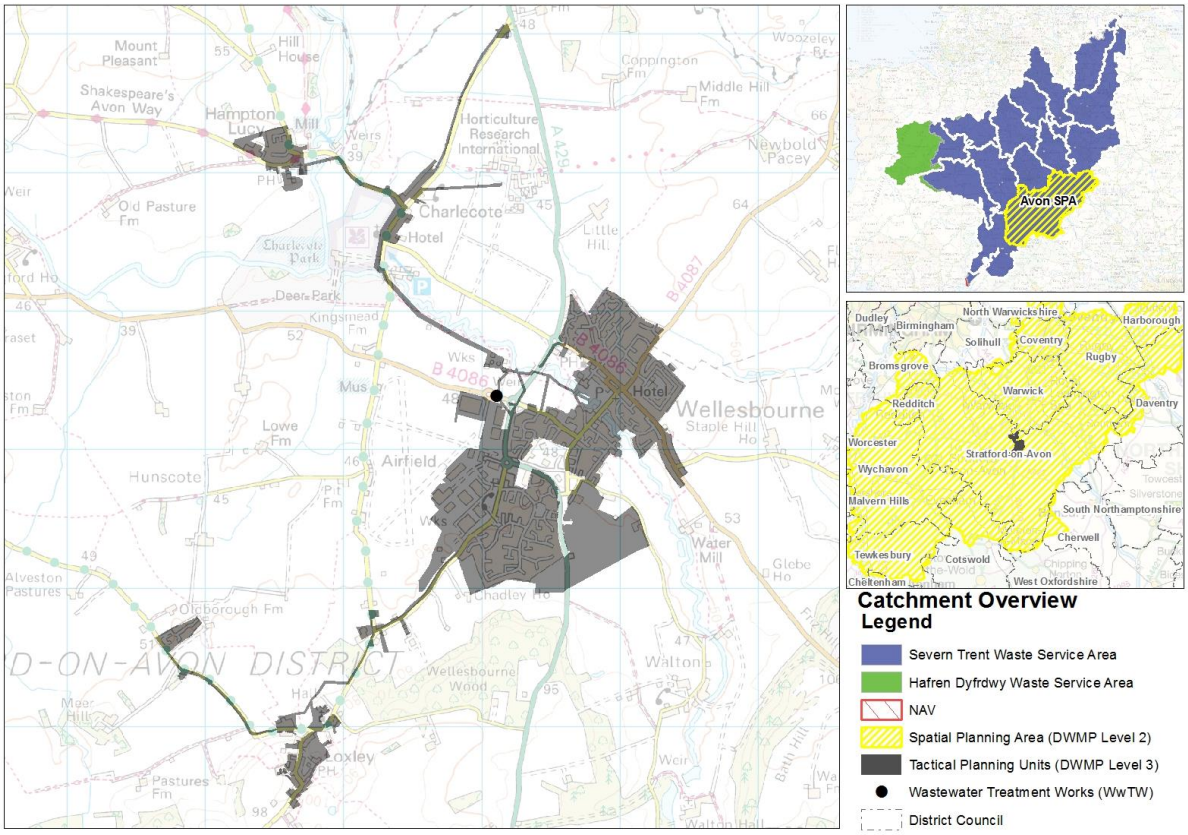
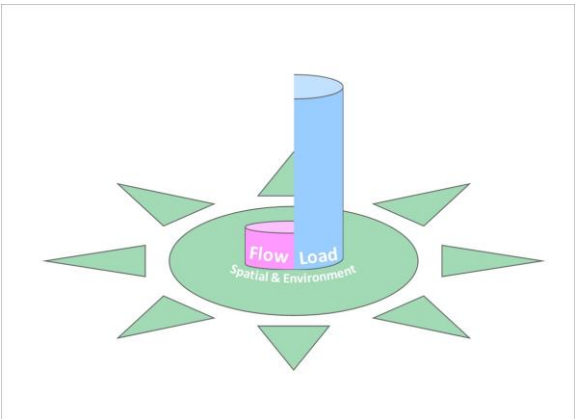


Figure 281 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 282 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 497 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 6 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 498 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 499 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 500 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	2	2	2	2	2	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 501 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
WELLESBOURNE - WALTON ROAD (STW) (19848)

March 2023

WONDERFUL ON TAP

Overview

Wellesbourne - Walton Road (Stw) WwTW serves a residential population of 68. Treated effluent is discharged to the River Dene.

Key Statistics:

- Residential Population Served: 68
- This is our 680th largest catchment across the whole of Severn Trent, and the 136th largest in the Avon SPA Stategic Planning Area making up <1% of its population.
- It has 2.0km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

This catchment has either recently transferred to us, or has been newly constructed, therefore was not within the scope at the start of our DWMP journey. As such this catchment was not included in the Risk Based Catchment Screening and has not been assessed as part of DWMP. Being a new catchment, we believe the relative risk is low and a more comprehensive review will be undertaken for cycle 2.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
WESTON-UNDER-WETHERLEY (10406)

March 2023

WONDERFUL ON TAP

Overview

Weston-Under-Wetherley WwTW is located to the south of Weston-under-Wetherley and serves a residential population of 779. Treated effluent is discharged to the River Leam. In addition to treating flows from Weston-under-Wetherley (gravity) it also drains the outlying villages of Easthorpe to the east (pumped) and offchurch to the south (pumped)

Key Statistics:

- Residential Population Served: 779
- This is our 360th largest catchment across the whole of Severn Trent, and the 63rd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 31.3km of public foul water sewers and 2.3km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

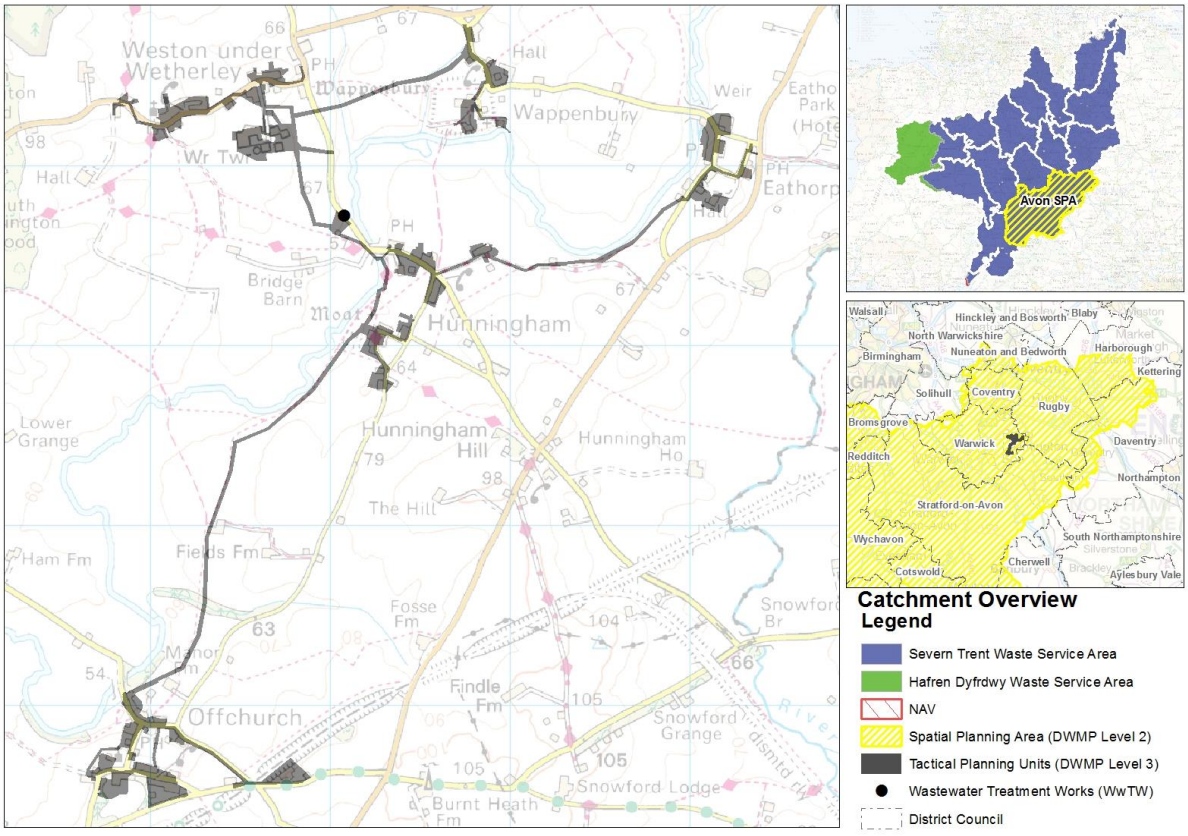
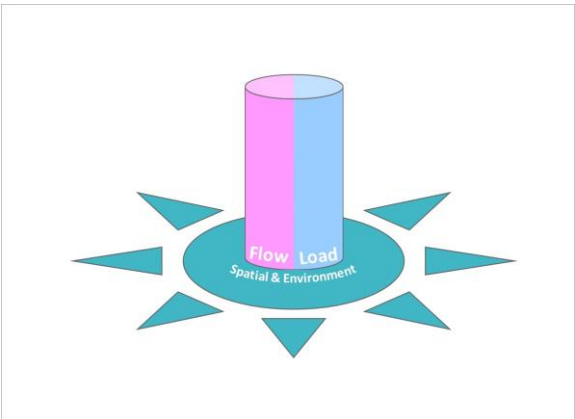


Figure 283 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 284 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 502 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 503 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 504 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 505 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	1	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 506 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: WHICHFORD (10347)

March 2023

WONDERFUL ON TAP

Overview

Whichford WwTW serves a residential population of 290. Treated effluent is discharged to a tributary of the River Stour.

Key Statistics:

- Residential Population Served: 290
- This is our 489th largest catchment across the whole of Severn Trent, and the 99th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 8.8km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

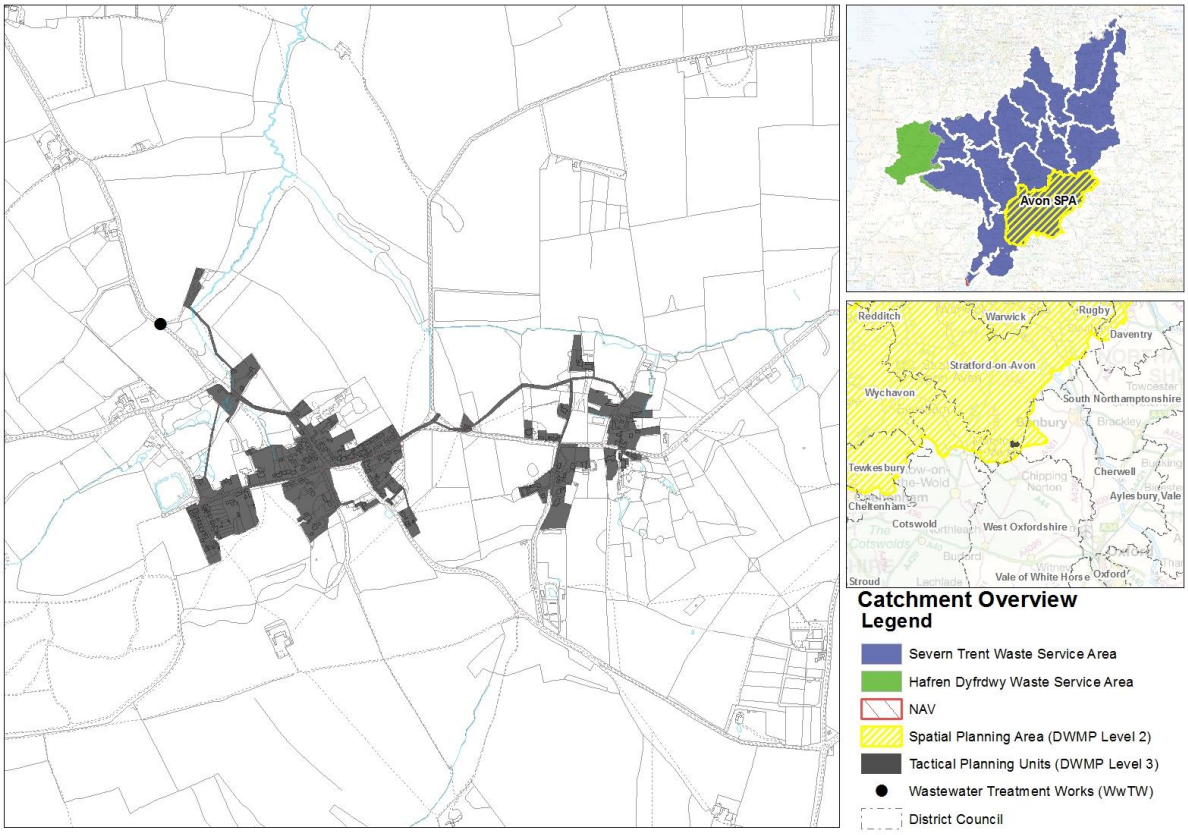
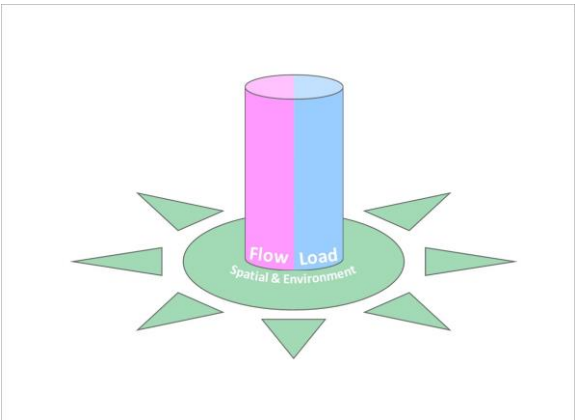


Figure 285 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 286 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 507 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
WHITTINGTON (NEAR MOTORWAY) (10088)

March 2023

WONDERFUL ON TAP

Overview

Whittington (Near Motorway) WwTW serves a residential population of 88. Treated effluent is discharged to the Stoulton Brook.

Key Statistics:

- Residential Population Served: 88
- This is our 647th largest catchment across the whole of Severn Trent, and the 130th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has <1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

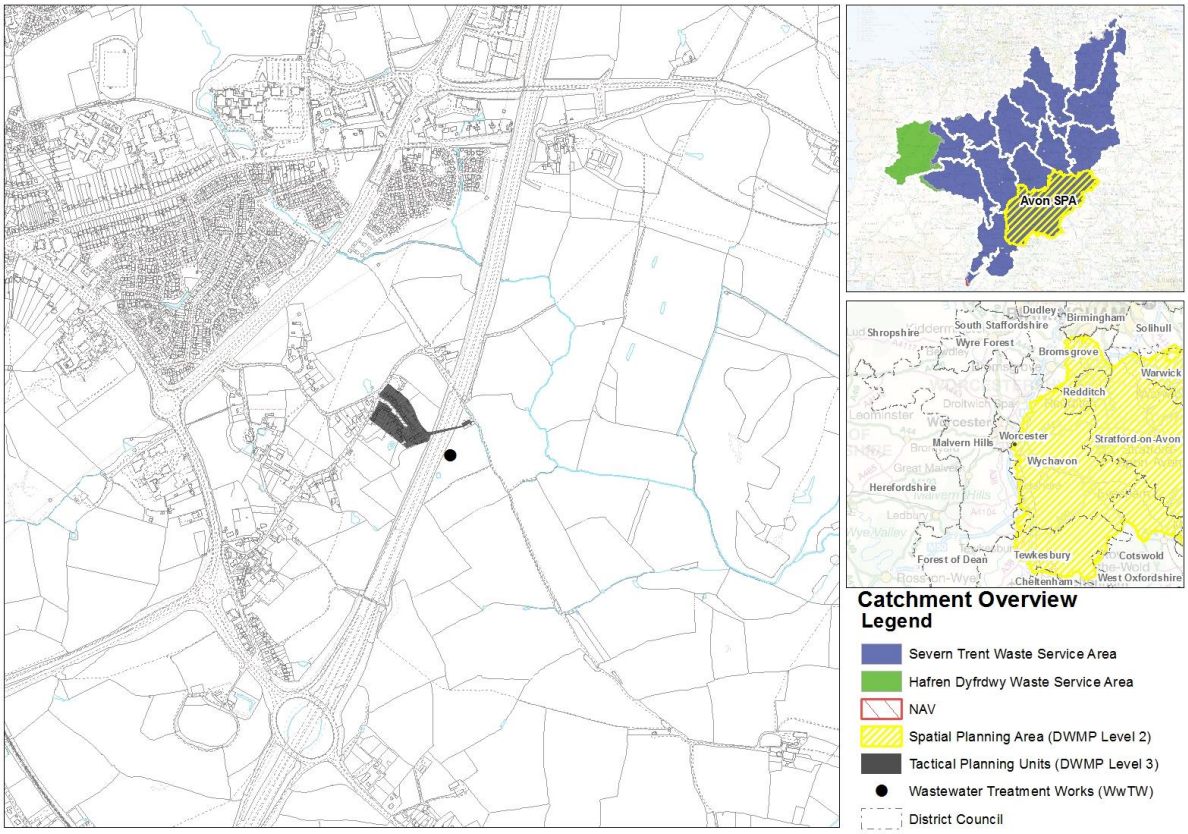
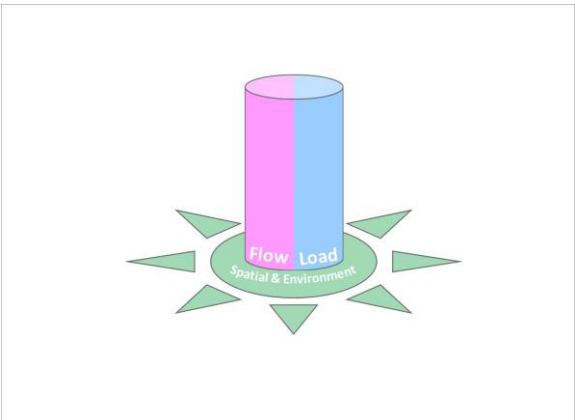


Figure 287 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 288 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 508 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
WHITTINGTON EAST (17817)

March 2023

WONDERFUL ON TAP

Overview

Whittington East WwTW serves a residential population of 42. Treated effluent is discharged to a tributary of the Stoulton Brook.

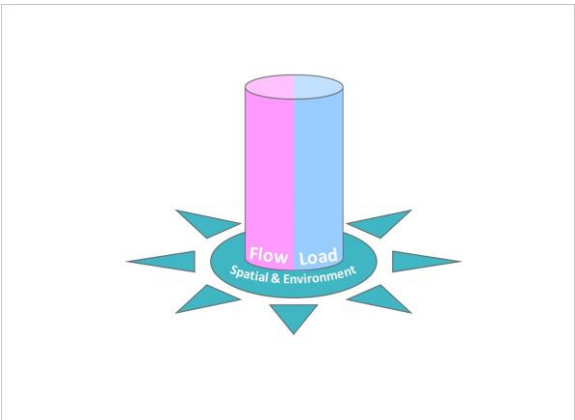
Key Statistics:

- Residential Population Served: 42
- This is our 738th largest catchment across the whole of Severn Trent, and the 142nd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has <1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

Figure 289 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 290 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 509 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	**No**
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	**No**
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	**No**
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	**No**
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	**No**
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	**No**
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	**No**
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	**No**

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Whilst the catchment triggered through the RBCS assessment, a pre-BRAVA review of the catchment indicated that the triggers were miss-representative of the long-term catchment risk. A decision was subsequently taken to downgrade the RBCS risk, resulting in the catchment not progressing any further along the DWMP process.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: WILLOUGHBY (10397)

March 2023

WONDERFUL ON TAP

Overview

Willoughby WwTW serves a residential population of 379. Treated effluent is discharged to a tributary of the River Leam.

Key Statistics:

- Residential Population Served: 379
- This is our 453rd largest catchment across the whole of Severn Trent, and the 86th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 4.8km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

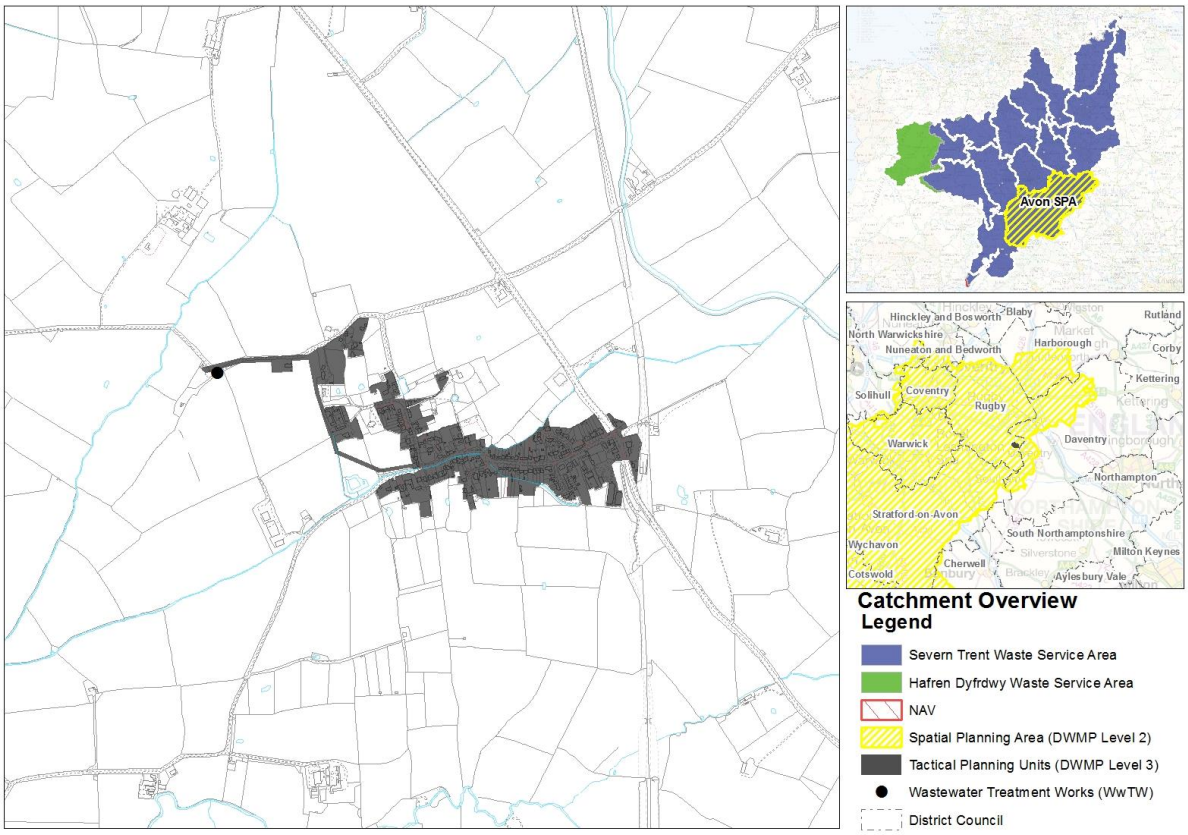
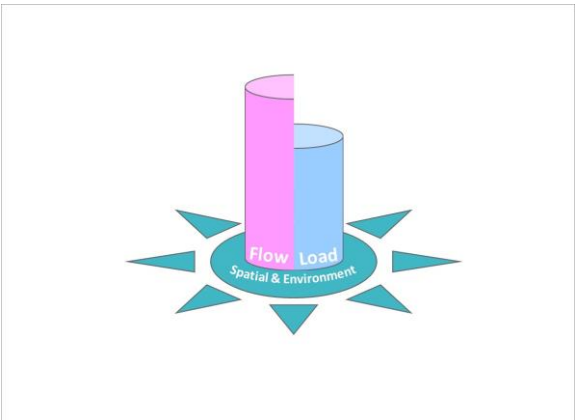


Figure 291 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 292 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 510 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: WINCHCOMBE (10305)

March 2023

WONDERFUL ON TAP

Overview

Winchcombe WwTW is located to the north of Winchcombe and serves a residential population of 5,110. Treated effluent is discharged to the River Isbourne.

Key Statistics:

- Residential Population Served: 5,110
- This is our 167th largest catchment across the whole of Severn Trent, and the 21st largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 37.8km of public foul water sewers and 15.3km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

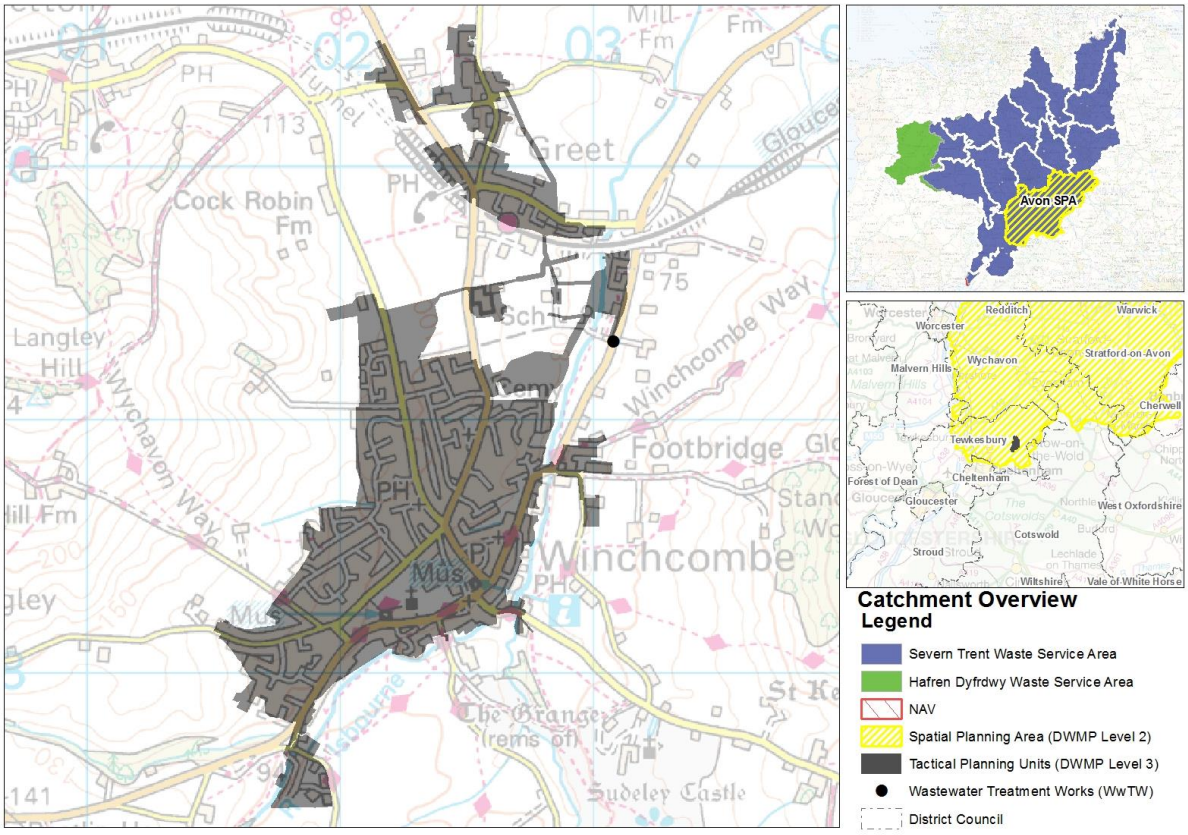
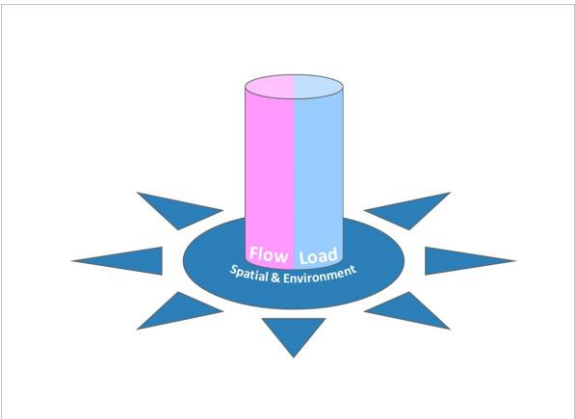


Figure 293 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 294 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 511 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	Yes
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 512 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 513 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 514 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	1	1	1	1	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 515 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	✓
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	✓
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	✓
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: WINWICK (10399)

March 2023

WONDERFUL ON TAP

Overview

Winwick WwTW serves a residential population of 36. Treated effluent is discharged to the Clay Coton Brook.

Key Statistics:

- Residential Population Served: 36
- This is our 755th largest catchment across the whole of Severn Trent, and the 143rd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 2.0km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

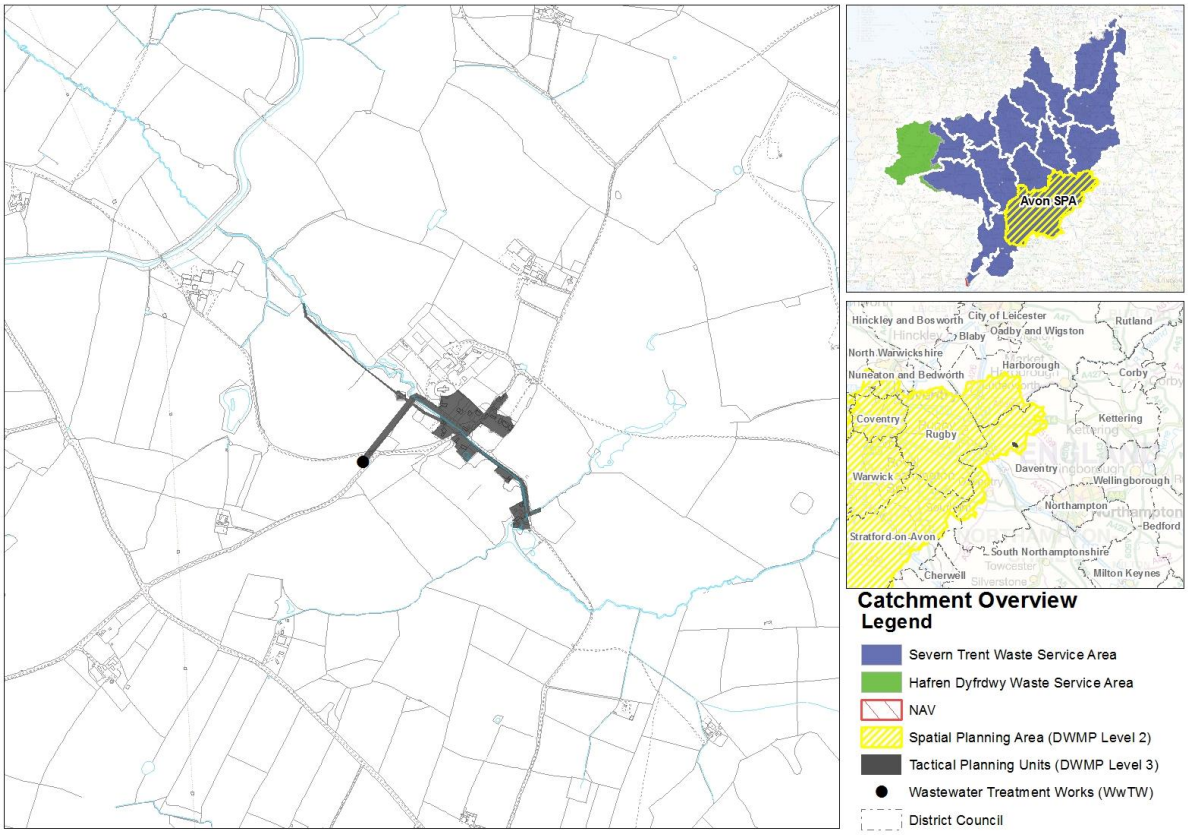
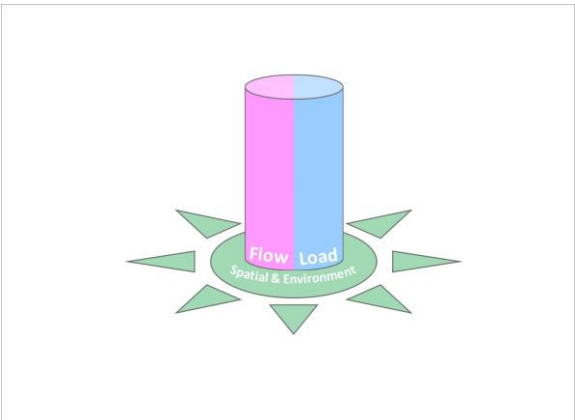


Figure 295 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 296 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 516 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
WOLSTON (10433)

March 2023

WONDERFUL ON TAP

Overview

Wolston WwTW is located in the central region of the catchment and serves a residential population of 5,830. Treated effluent is discharged to the River Avon. It treats flows form Ryton on Dunsmore to the west (pumped), Stretton on Dunsmore to the south (pumped) and Brandon to the East (gravity).

Key Statistics:

- Residential Population Served: 5,830
- This is our 162nd largest catchment across the whole of Severn Trent, and the 20th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 52.8km of public foul water sewers and 29.3km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

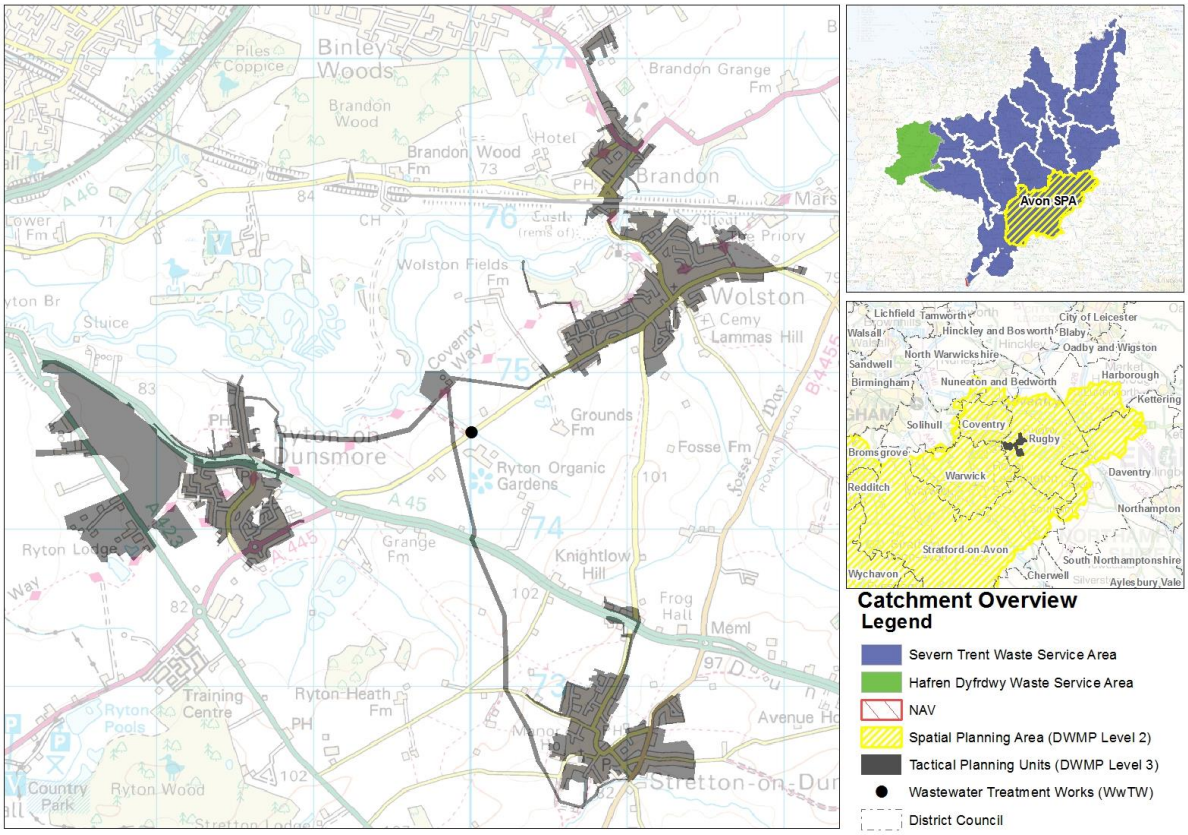
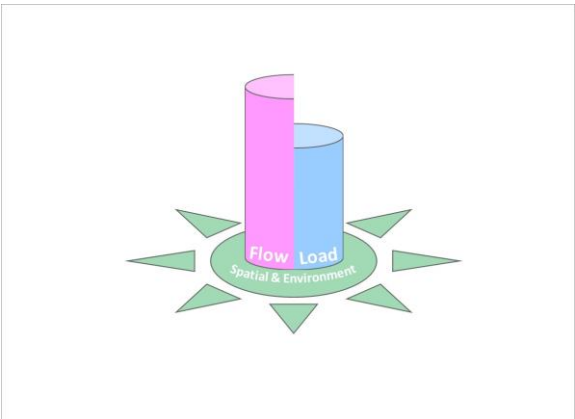


Figure 297 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



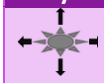
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 298 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 517 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	Yes
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 518 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 519 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 520 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	2	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	1	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 521 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

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Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: WOOLSTONE (10306)

March 2023

WONDERFUL ON TAP

Overview

Woolstone WwTW is located to the west of Woolstone and serves a residential population of 1,160. Treated effluent is discharged to the Tirle Brook. In additional to treating the flow flows from Woolstone, the catchment also drains Oxenton (pumped) and Gotherington (gravity).

Key Statistics:

- Residential Population Served: 1,160
- This is our 308th largest catchment across the whole of Severn Trent, and the 43rd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 16.0km of public foul water sewers and 2.6km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

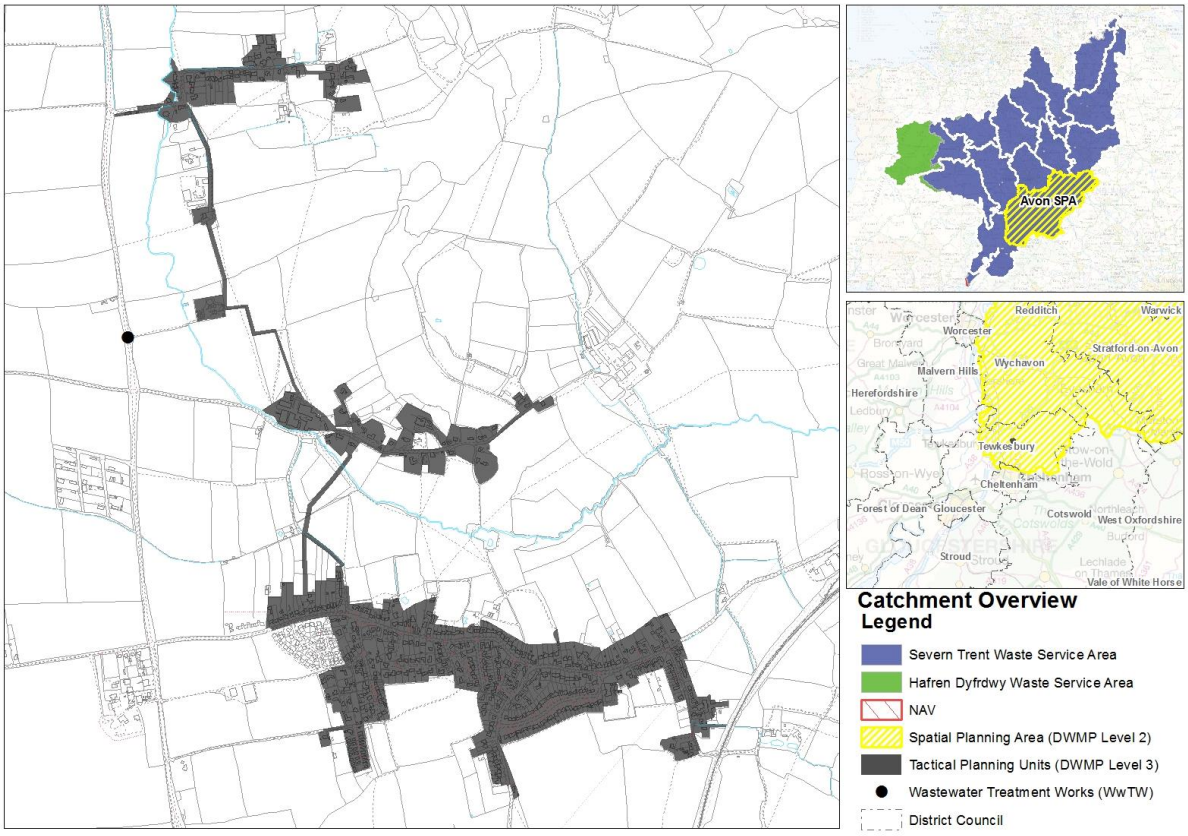
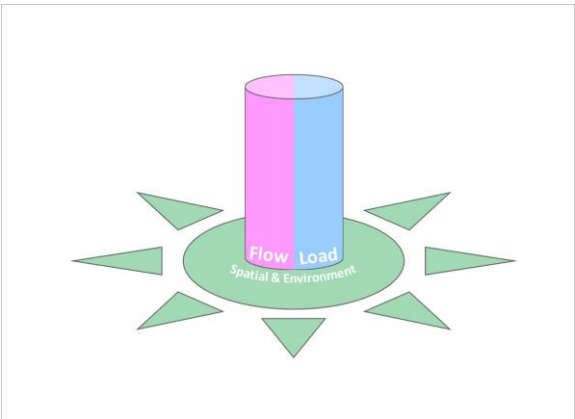


Figure 299 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 300 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 522 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	Yes
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

Due to this catchment triggering on 1 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 523 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 524 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 525 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	2	2	2	2	2	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	1	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	1	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 526 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
WOOTTON WAWEN (10378)

March 2023

WONDERFUL ON TAP

Overview

Wootton Wawen WwTW is located to the south of the catchment and serves a residential population of 3,582. Treated effluent is discharged to the River Alne. In addition to treating flows from Wotton Wawen (gravity) it also drains the villages Henley on Arden to the north (gravity).

Key Statistics:

- Residential Population Served: 3,582
- This is our 200th largest catchment across the whole of Severn Trent, and the 25th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 38.3km of public foul water sewers and 5.8km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

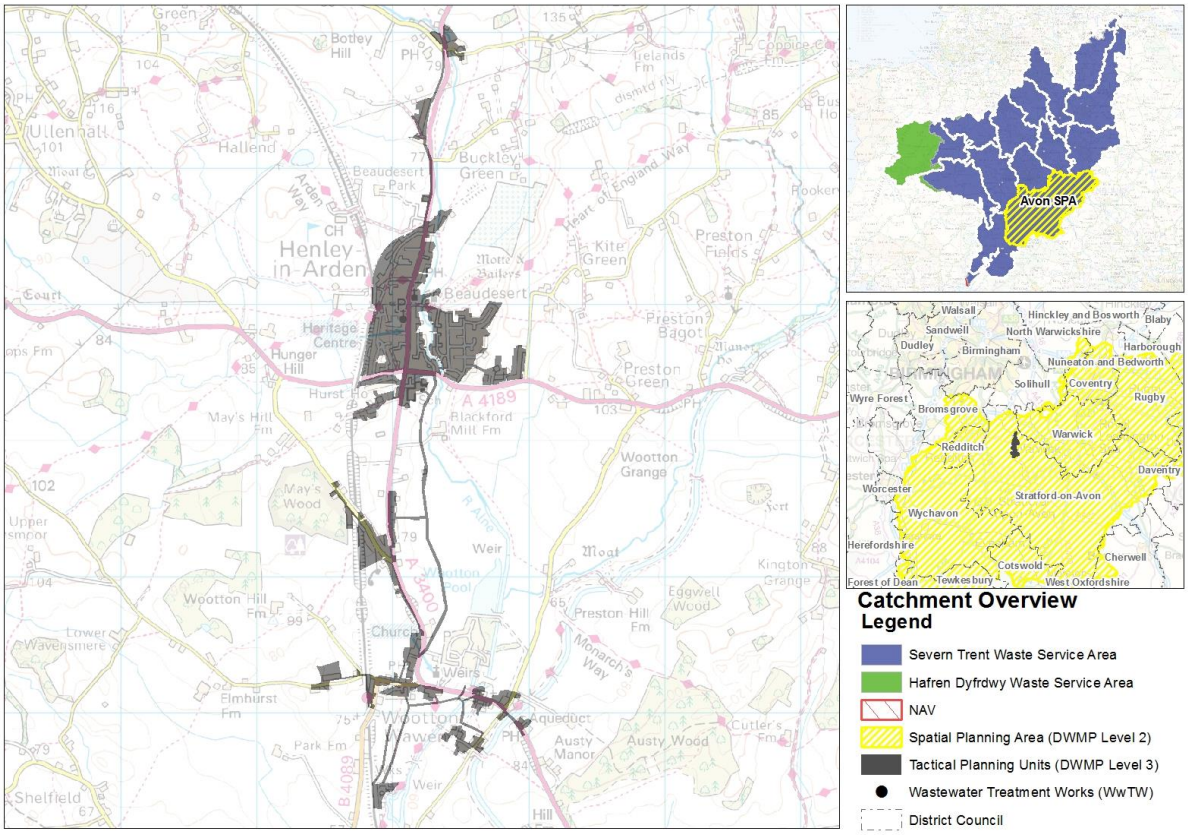
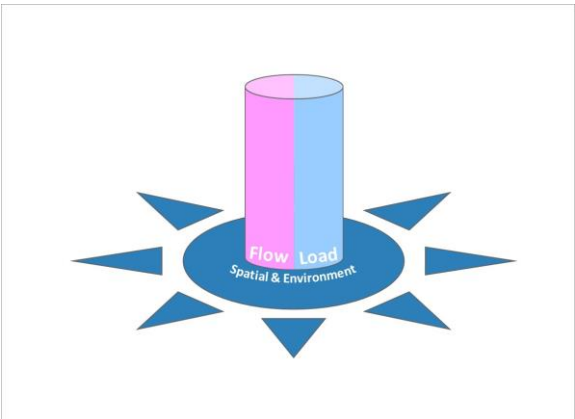


Figure 301 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 302 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 527 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	Yes
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	Yes
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	Yes
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 3 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 528 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 529 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 530 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	1	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	2	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	2	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	1	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 531 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	✓✓✓
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	✓✓
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	•
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview: WORMINGTON (10314)

March 2023

WONDERFUL ON TAP

Overview

Wormington WwTW serves a residential population of 110. Treated effluent is discharged to the River Isbourne.

Key Statistics:

- Residential Population Served: 110
- This is our 615th largest catchment across the whole of Severn Trent, and the 123rd largest in the Avon Stategic Planning Area making up <1% of its population.
- It has <1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

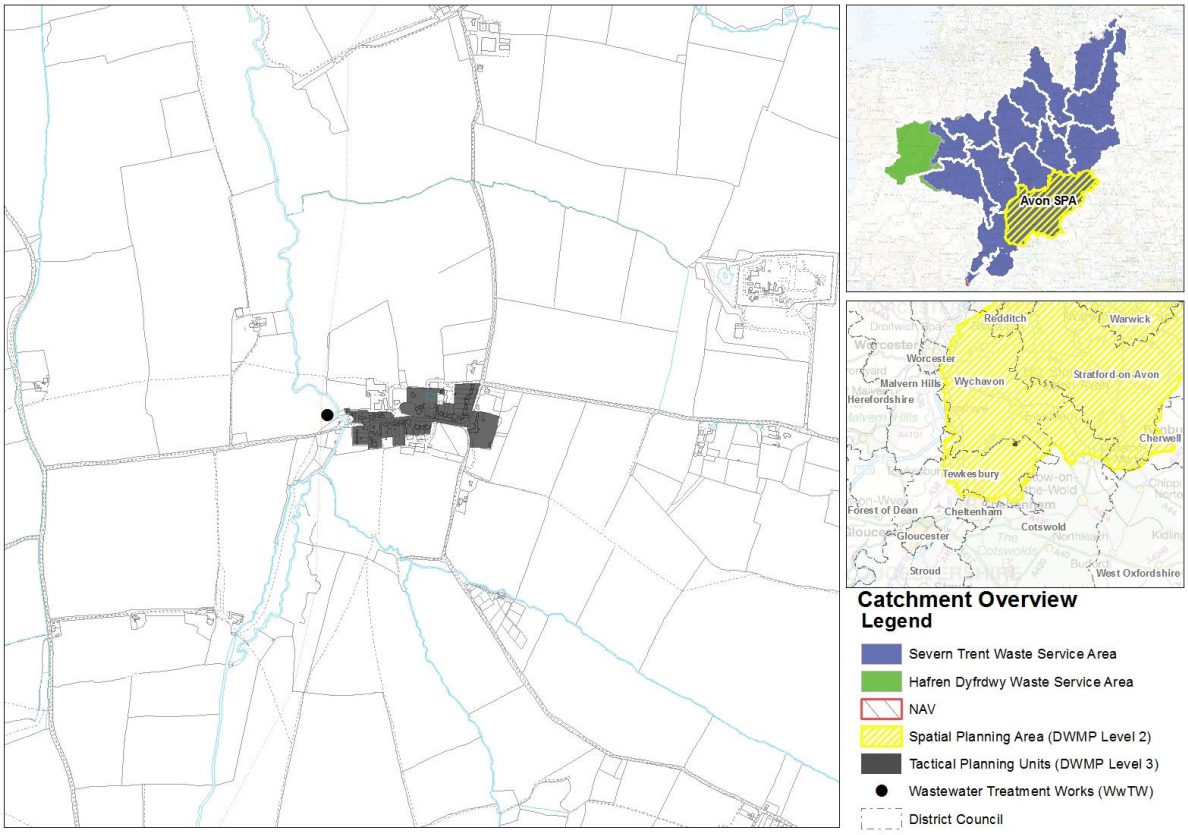
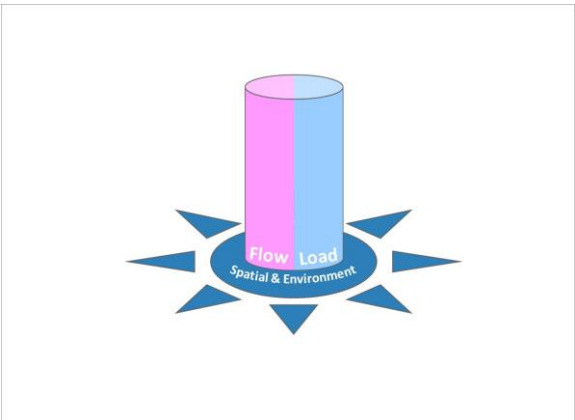


Figure 303 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 304 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 532 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

Should you need to contact us about more immediate concerns regarding current performance of our wastewater assets, please visit our 'Contact Us' website: https://www.stwater.co.uk/help-and-contact/contact-us/. For any issues requiring an urgent response please call our 24/7 telephone number: 0800 783 4444.

Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
WORMLEIGHTON (10400)

March 2023

WONDERFUL ON TAP

Overview

Wormleighton WwTW serves a residential population of 89. Treated effluent is discharged to a tributary of the River Itchen.

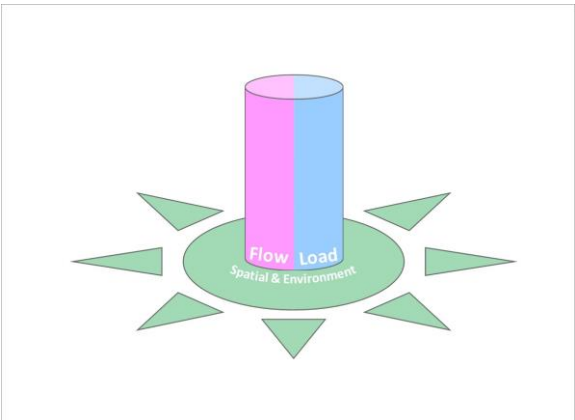
Key Statistics:

- Residential Population Served: 89
- This is our 645th largest catchment across the whole of Severn Trent, and the 129th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 3.1km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

Figure 305 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); “Risk of Wastewater Treatment Works quality compliance failure” we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a ‘showstopper’. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; “Assessing WwTW Capacity”.



Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 306 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 533 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	No
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	No

This catchment does not trigger enough tier 1 indicators to progress through to the Baseline Risk and Vulnerability (BRAVA) stage. Tier 2 indicators such as sewer collapses or blockages are not sufficient on their own to warrant progressing a catchment through to BRAVA.

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

Contacting us

Our DWMP covers the planning period from 2025 to 2050, and is mainly focussed at a catchment level. If you have any comments relating to our DWMP then please feedback using our online feedback form or email us at dwmp@severntrent.co.uk.

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Drainage and Wastewater Management Plans (DWMP)

Level 3 Tactical Planning Unit - Catchment Overview:
YELVERTOFT (10432)

March 2023

WONDERFUL ON TAP

Overview

Yelvertoft WwTW is located to the north east of Yelvertoft and serves a residential population of 753. Treated effluent is discharged to the Yelvertoft Brook.

Key Statistics:

- Residential Population Served: 753
- This is our 367th largest catchment across the whole of Severn Trent, and the 65th largest in the Avon Stategic Planning Area making up <1% of its population.
- It has 6.9km of public foul water sewers and <1km of public surface water sewers (these exclude Section 24 and sewers transferred in 2011).

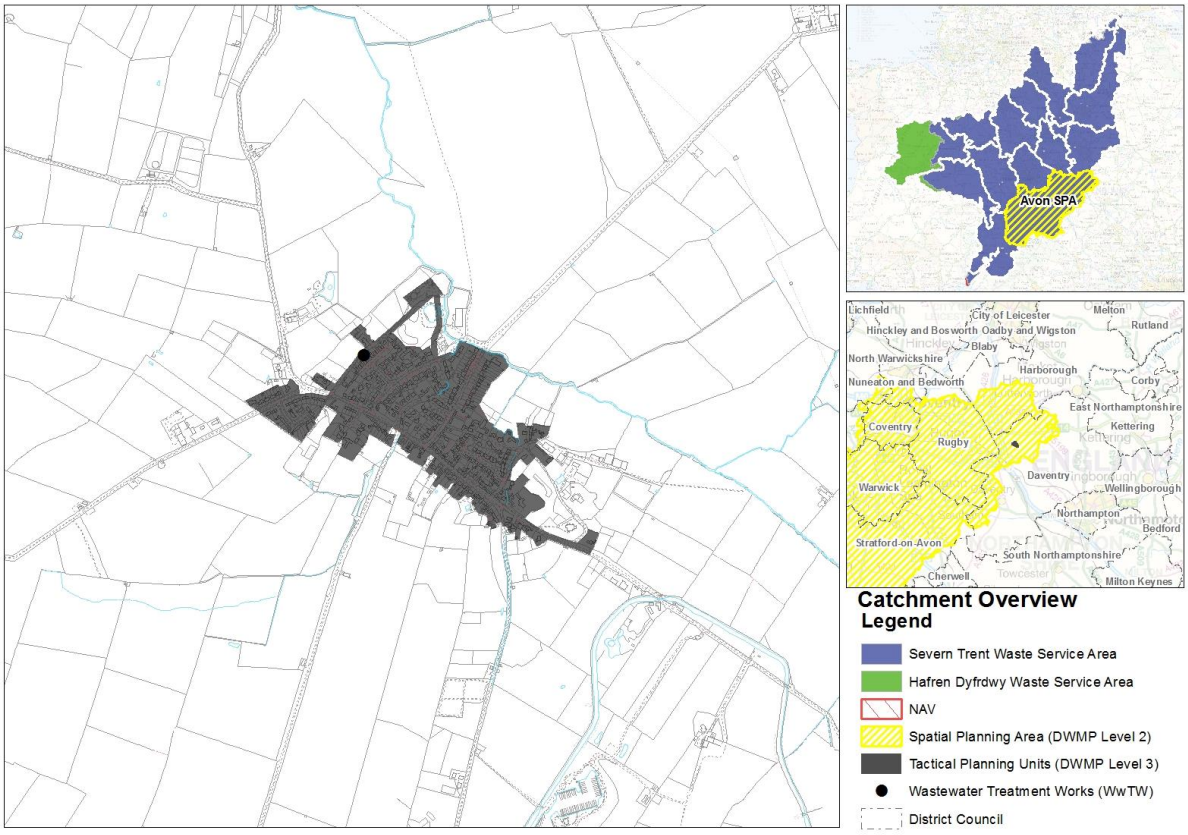
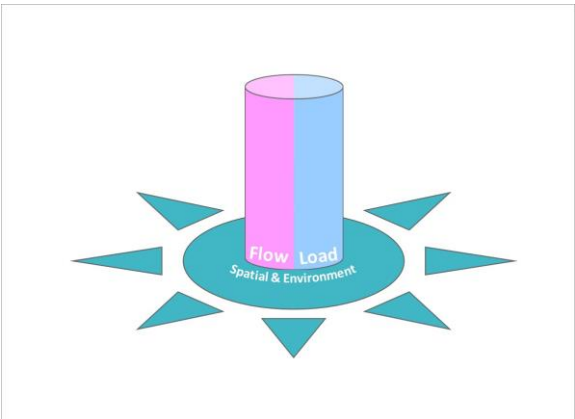


Figure 307 An overview map showing the extent of the catchment and its context within the Level 2 Strategic Planning Area and Level 1 Company.

Wastewater Treatment Works (WwTW)

In line with Common Planning Objective 6 (CPO6); "Risk of Wastewater Treatment Works quality compliance failure" we have considered pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'. The output of this assessment is summarised in *Figure 2* (below). For more information on this assessment please see the DWMP Technical Summary; "Assessing WwTW Capacity".



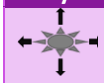
Key	Constraint	Description
	Spatial	Indicated by the size of the base, the larger the base, the more space that is available to expand the WwTW if needed.
	Environment	The ability of the watercourse to accept increased treated effluent loadings against the achievable treatment limits where there is limited room for improvements then the icon is dark blue, where there is capacity to adjust processes then the icon is pale yellow.
	Load	Indicated by the blue bar, the larger the bar the greater the spare capacity within the treatment processes to treat additional growth.
	Flow	Indicated by the pink bar, the larger the bar the greater the spare capacity within the current permit to accommodate additional growth.

Figure 308 Displays the Wastewater Treatment Works long term constraints.

Risk Based Catchment Screening (RBCS)

The RBCS process was undertaken at an early stage of the DWMP process with the aim of giving a high-level understanding of potential catchment risks and vulnerabilities. It assessed Wastewater Treatment Works (WwTW) catchments current and past performance against a range of indicators that align with the drivers in the Strategic Context document.

Table 534 Summary table of the Risk Based Catchment Screening (RBCS) results.

No.	Indicator	Tier	Description	Trigger
1	Catchment Characterisation	2	The characterisation score from the Stage 2 of the Wastewater Resilience PR19 common performance commitment was used to understand the vulnerability of the catchment to sewer flooding resulting from an extreme wet weather event. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	Yes
2	Intermittent discharge impacts upon bathing or shellfish waters	1	This uses mechanisms to understand the significance of any impact of water company operations on environmental receptors. The intermittent discharge impacts upon bathing or shellfish waters measure were not appliable at the time of the assessment for Cycle 1 of the DWMP as there are no shellfish waters within Severn Trent and Hafren Dyfrdwy regions.	No
3	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A)	1	The 'Remedies' data from Natural England and 'Actions' data from Natural Resource Wales (NRW) were used to understand the significance of any impact of water company operations on environmental receptors.	No
4	Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B) (Tier 2)	2	The 'Threats' data from Natural England and 'Issues' data from Natural Resource Wales (NRW) are used to understand the significance of any impact of water company operations on environmental receptors. This indicator is tier 2 and therefore will not contribute to trigger a breach alone.	No
5	Storm Overflow Assessment Framework (SOAF)	1	The SOAF indicator triggers where a catchment contains sewer overflows that are under investigation or proposed for investigation under the SOAF guidance. The Water Industry National Environment Programme (WINEP) delivery metric is used to identify overflow locations.	No
6	Capacity Assessment Framework (CAF)	1	It provides an indication of capacity constraints in the network as a leading indicator of service failure.	No
7	Internal Sewer Flooding	1	This is in line with the PR19 performance commitment. It is an historical measure that records the number of internal flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
8	External Sewer Flooding	1	This is in line with the external sewer flooding PR19 asset health performance commitment. It is an historical measure that records the number of external flooding incidents per year including flooding caused by extreme events to be consistent with the Ofwat definition.	No
9	Pollution incidents (Category 1, 2 and 3)	1	As per the 2017 definition of the Environmental Performance Assessment (EPA), this is a measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage.	No
10	WwTW quality compliance	1	An historical assessment of WwTW discharge permit compliance	No

No.	Indicator	Tier	Description	Trigger
11	WwTW dry weather flow compliance	1	An historical assessment of compliance of dry weather flow permits based on measured flow, and for catchments that do not have measured flow available calculated flow.	No
12	Storm overflows	1	Using available data to examine permit risks not already covered by other indicators. It looks at whether there is evidence to indicate a storm overflow is not operating within permit. Where monitoring is not in place consideration was given to reported concerns.	Yes
13	Risks from interdependencies between RMA systems	1	A mechanism to understand risk posed by other Risk Management Authorities (RMA) assets in the catchment.	No
14	Planned residential new development	1	Uses predicted residential population growth forecasts checked against Office for National Statistics (ONS) publications of UK growth to target catchments requiring investigations for potential future capacity constraints. Thresholds for this indicator can be found in Appendix B (Section B2.1.3) of the DWMP Framework.	No
15	The Water Industry National Environment Programme (WINEP)	1	WINEP sets out the actions that companies will need to complete to meet their environmental obligations and details the specific drivers for mitigating measures. Only catchments that contain wastewater investigations, option appraisals or scheme within the WINEP programme trigger.	No
16	Sewer collapses	1	An historic measure using data from the PR19 Common / asset health performance commitment for sewer collapses. It identifies risks to the integrity of the sewer system.	No
17	Sewer blockages	1	An historic measure using data from the PR19 asset health performance commitment for sewer blockages. It records obstructions in a sewer that require clearing and which cause a reportable problem such as flooding or discharge to a watercourse, unusable sanitation, surcharging sewers or odour.	Yes

Due to this catchment triggering on 2 indicator(s) (excluding sewer blockages and collapses); this catchment progressed through to the Baseline Risk and Vulnerability (BRAVA) stage.

How is this catchment performing?

During the implementation of the DWMP process, it was requested that all companies report against six Common Planning Objectives. These are intended to provide stakeholders with an informed overview of the 2020 baseline performance, and the long-term risk considering future challenges of climate change, urban creep and growth for three of the planning objectives, under a 'do nothing' scenario.

We have identified four additional Opportunity Indicators which help us to consider the wider interacting needs and challenges that are predominantly under the responsibility of our stakeholders, but which have the opportunity to positively contribute to the wider benefits that the DWMP can bring.

Table 535 Description of the priority risk bands for Common Planning Objectives.

Band	Priority Level	Description
2	Short Term Priority	The needs of the catchment indicate that performance warrants more immediate investigation and is a short term priority to improve performance. The solution to remedy the need could be simple or complex which can be understood through Option Development and Appraisal stage of DWMP.
1	Medium Term Priority	The needs of the catchment indicate that performance appears to be borderline and therefore needs further investigation in the Options Development and Appraisal stage of DWMP.
0	Long Term Priority	The needs of the catchment indicate that performance is not triggering specific risk thresholds and current baseline performance (or projected 2050 performance) is not a significant issue or concern. This is a long-term priority to address sider strategic needs. Where there may localised needs there is the mechanism to address through 'business as usual' investment decisions.
N/A	Not Assessed	Where a planning objective has not been assessed due to not being able to project to 2050 .

Table 536 Description of the priority risk bands for Opportunity Indicators.

Band	Opportunity Level	Description
2	Good	This indicates the catchment is likely to offer good opportunities for DWMP interventions to benefit a particular indicator.
1	Reasonable	This suggests there are reasonable opportunities across a catchment to support an indicator.
0	Limited	Based on the characteristics of the catchment our assessment suggests there are limited opportunities to support an indicator, however there may still be some benefits which could still be gained.
N/A	Not Assessed	Where an opportunity indicator has not been assessed due to not being able to project to 2050.

Table 537 Summary table of results for both Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2025	2030	2035	2050	Comments
Common Planning Objectives (Aligned to methodologies published in July 2020)							
CPO1	Internal Sewer Flooding Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of internal sewer flooding incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO2	Pollution Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO3	Sewer Collapse Risk *	0	N/A	N/A	N/A	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2018 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	0	0	0	0	0	This approach uses the basis of the RoSFiaS methodology but incorporates enhancements to align with assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	0	0	0	This uses the approach set out in the 2017 Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	0	0	0	0	0	This considers pressures on flow and quality permit compliance, plus any technological limitations or physical site conditions which could be a 'showstopper'.
Opportunity Indicators							
OI1	Risk of surface, fluvial and groundwater flooding	2	N/A	N/A	N/A	N/A	This indicator uses surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from cocreated drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	1	N/A	N/A	N/A	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as not suitable surface water sewers are available or the ground conditions limit use of SuDS.
OI3	Effective wastewater asset resilience	0	N/A	N/A	N/A	N/A	High level assessment of WwTW and major pumping station resilience against fluvial (river) flooding, electricity supply failures and communication outages.
OI4	Supporting Water Resource Management Plan strategies	2	N/A	N/A	N/A	N/A	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

What viable interventions may work in this catchment?

Table 5 (below) indicates which options are expected to be viable within the catchment. This considered the physical characteristic of the catchment and its long-term needs. Through the option development and appraisal process, this indicates interventions with more 'ticks' are considered to have higher viability.

Table 538 Summary table of the Option Development Appraisal findings, indicating what types of options are more suitable for the catchment.

Type		Intervention Theme	Aim of Intervention	Level of Benefit
Reduce		Domestic Water Consumption Management	Working with customers to reduce inflow from domestic properties to reduce base flows.	✓✓
		Trade Flow Demand Management	Working with non-household traders to identify opportunities to pre-treat flows on site to offset load issues at the WwTW.	•
		Customer Education	Working with customers to raise awareness of the impact of sewer misuse, water consumption and increase of impermeable area creep. This is a company level activity.	•
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.	•
		Infiltration Management	Managing groundwater ingress into the sewer network during wet weather in areas with high water tables through activities such as sewer lining and replacement.	✓✓
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. This is a business-as-usual activity.	•
		Sewer Flow Management to Optimise Headroom	Identify opportunities within the sewer network where alterations can be made to make better use of existing spare capacity.	•
		Storm Overflow Rationalisation	Identify opportunities to combine multiple Storm Overflows into a single asset designed to improved modern design standards.	•
		Active System Control	Using smart technology such as Active System Control or Real Time Control to dynamically hold flows back in areas where there is more capacity such as existing tanks.	•
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. This is a business-as-usual activity.	•
	WwTW	River Catchment Flexible Permitting	Utilise River reach analysis of permits to ensure that impacts from WwTW are cumulatively considered and balanced to meet both the permit needs of the WwTW and the environmental capacity objectives for the watercourse.	✓✓
		WwTW Treatment Optimisation/ Decentralisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare capacity or providing a new WwTW to release capacity at the existing WwTW.	✓✓✓✓
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments for example through use of reed beds and UV filters.	✓
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DMWP scope.	•
Build	Sewerage Network	Sewer Capacity Upgrades	Traditional capacity upgrades including building new sewers and attenuation tanks.	✓✓✓✓✓
		Sewer Rehabilitation	Repair of structural condition of sewers through replacement, sewer lining or patch repairs to reduce risk of collapse, burst or blockage. This is a business-as-usual activity covered through capital maintenance plans.	•
	WwTW	WwTW Capacity Upgrades	Traditional capacity upgrades including building new treatment capacity considering land availability and environmental capacity of the receiving watercourse.	✓✓✓✓
		WwTW Capital Maintenance	Repair and maintenance of existing assets at WwTW. This is a business-as-usual activity covered through capital maintenance plans.	•
Environmental		SuDS for Groundwater Recharge	SuDS Strategies to support groundwater recharge to support water availability objectives.	✓
		Natural Flood Management	Use of Natural Flood Management to manage flood levels where they interact with and inundate the wastewater system.	✓✓✓✓
Indirect Measures		Influencing Policy	Influencing policy on growth, planning, surface water connections to reduce inflow. This is a company level activity.	•
		Investigate and Monitor	Understand root cause and risk. This is a company level activity.	•
		Future Technology	To await or develop new technology to support with meeting objectives. This is a company level activity.	•

What's next?

From our analysis undertaken so far, this has helped us better understand the performance of those catchments which have proceeded through DWMP. This allows us to understand the expected long term

investment needs across our catchments and this is already being used to support and inform the development of our PR24 Business Plan. The PR24 investment period covers 2025 to 2030 and so will help deliver the first five years of our first 25 year DWMP.

As the scope of DWMP is intended to inform the most appropriate high level direction for a catchment, we are not able to give more details as to what specific schemes are likely to be built. This level of detail will follow as part of our PR24 delivery, as we need to complete detailed scheme specific feasibility investigations to decide what actual schemes will look like. However, the schemes we build will be aligned to our long term DWMP strategies, with delivery optimised to ensure schemes are commissioned when required, and where necessary phased to manage any uncertainties.

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