

# Drainage and Wastewater Management Plans (DWMP)

Level 2 Strategic Planning Area Overview:  
Avon SPA

Final DWMP (March 2023)

WONDERFUL ON TAP



## FDWMP: Detailed Level 2 Strategic Planning Area Assessment (Avon)

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### Background

For our Drainage and Wastewater Management Plan (DWMP) we have split our region into Strategic Planning Areas which closely align with the River Basin Management Catchments. The aim of this document is to share the outputs of our DWMP that specifically relate to the Avon Strategic Planning Area.

This document focusses on the Avon Strategic Planning Area (SPA) which is aligned to the Avon Warwickshire River Basin Management Catchment.

Within the Severn Trent Avon SPA there are 155 Wastewater Treatment Works (WwTW) catchments serving a residential population nearing 1,111,264 people and 478,761 properties. This makes it the 3<sup>rd</sup> largest SPA across Severn Trent region, serving 10.7% of the company's total population.

We completed Risk Based Catchment Screening (RBCS) as part of the DWMP assessment process, where all 155 catchments were assessed in line with the criteria set out in the Framework. The purpose of the RBCS was to assess each catchment against 17 metrics to determine the level of risk, to screen out lower risk catchments enabling us to focus our attention and more detailed assessment in areas with greater priority. This resulted in 96 catchments triggering progression to the next stage, known as BRAVA, where more detailed assessment and hydraulic modelling was undertaken. This resulted in 99% of the connected residential population of the Avon SPA undergoing more detailed assessment, with those not triggering at present being kept under review to ensure any new risks are taken into consideration in future RBCS refreshes.



The map below shows the extent of the Avon SPA, with catchments coloured green if they have progressed to detailed assessment (known as Baseline Risk and Vulnerability Assessment, or BRAVA), with those catchments which have been screened out as part of RBCS shown in red.

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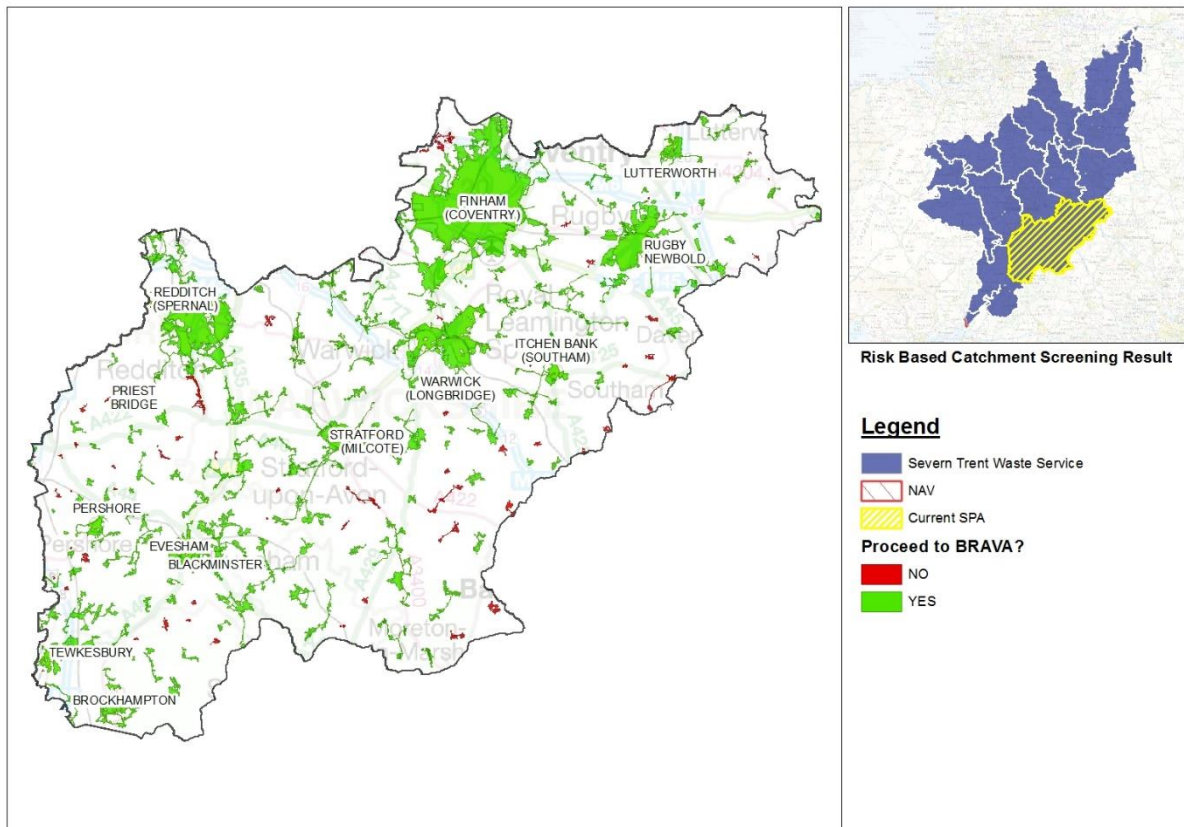


Figure 1: Map of the Avon SPA showing catchments which triggered BRAVA (green) and lower priority catchments (red)

### Assessing Catchments

In terms of catchments, **Table 1** lists all catchments within the SPA, identifying the size and whether they have proceeded to more detailed assessment or were screened out following the RBCS.

We have grouped each catchment into three categories based on their size, which reflects the strategic approach:

- **Large** - Catchments over 10,000 population are often complex with multiple interactions. They are likely to benefit from phased interventions to meet immediate needs which align with the overall long term catchment strategy.
- **Medium** - Catchments with populations between 2,000 and 10,000 are not expected to be overly complex hydraulically but may require mini strategies to address risks.
- **Small** – Catchments with populations less than 2000; this forms the majority of our catchments. Where risks need to be addressed, they are not usually complex hydraulically, however there are often more interactions with other drainage systems which require more in-depth local feasibility work to understand the root cause and identify potential interventions. Due to the often more rural nature, smaller catchments often have fewer physical constraints that could make a solution complex.

Where a catchment has not been assessed, this is because it did not trigger as part of the Risk Based Catchment Screening (RBCS) stage of the DWMP process. These catchments have been assessed as being lower risk but will be kept under review should changes in the catchment warrant further assessments.

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**Table 1:** Summary of the catchment size distribution and which catchments triggered a more detailed assessment (BRAVA)

Assessed			Not Assessed
Large Sized Catchments >10,000 population	Medium Sized Catchments 10,000 - 2,000 population	Smaller Catchments <2,000 population	Catchments which did not trigger more detailed assessment (BRAVA)
ALVECHURCH (10152) BLACKMINSTER (10027) BROCKHAMPTON (10308) EVESHAM (10035) FINHAM (COVENTRY) (10451) ITCHEN BANK (SOUTHAM) (10434) LUTTERWORTH (11232) PERSHORE (10040) PRIEST BRIDGE (10163) REDDITCH (SPERNAL) (10168) RUGBY NEWBOLD (10429) STRATFORD (MILCOTE) (10348) TEWKESBURY (10313) WARWICK (LONGBRIDGE) (10354)	ALCESTER (10151) ASTWOOD BANK (10148) BEDWORTH (MARSTON LANE) (10454) BIDFORD-ON-AVON (10154) BREDON (10028) BROADWAY (10287) CHIPPING CAMPDEN (10330) CROPTHORNE HEATH (10030) DUNCHURCH (10402) FRANKTON (10403) HARVINGTON WORKS (10161) HONEYBOURNE (10051) KILSBY (10404) KINETON-STW (10430) SHIPSTON FELL MILL (10332) WELLESBOURNE (10355) WINCHCOMBE (10305) WOLSTON (10433) WOOTTON WAWEN (10378)	ALDERTON (10282) ASHTON-U-HILL (10265) BEARLEY (10318) BECKFORD (10285) BISHAMPTON (10026) BLOCKLEY (10329) BRAUNSTON (10401) BRINKLOW (10405) BUBBENHALL (10427) CHERINGTON (10350) CHURCH LAWFORD (10382) CHURCH LENCH (10156) CHURCHOVER (10383) CLAVERDON (10349) CROWLE (WORCESTER) (10097) DEFFORD VILLAGE (10032) ECKINGTON (10033) ETTINGTON (10321) FENNY COMPTON (10425) FLYFORD FLAVELL (10165) HANBURY (WORCESTERSHIRE) (17618) HARBOROUGH MAGNA (10385) HINTON-ON-THE-GREEN (10047) ILMINGTON (10340) INKBERROW (10166) KIMCOTE (11229) KINGTON (10167) LAVERTON (10312) LEEK WOOTTON (10351) LIGHTHORNE (10388) LIGHTHORNE HEATH (10389) LILBOURNE (10387) LITTLE COMBERTON WKS (10046) LONG COMPTON (10341) LOWER MOOR (10055) LOWER STRENSHAM (10052) MONKS KIRBY (10466) MORETON MORRELL (10390) MORETON PADDOX (10391) NAPTON WRW (10393) NASEBY WRW (10392) NETHERCOTE (10343) NORTHEND (10394) NORTON LINDSEY (10342) PEOPLETON (10039) ROWINGTON (10353) SEDBERROW (10022) SHAWELL (11235) SNITTERFIELD (10326) SOUTH KILWORTH (11248) STOKE ORCHARD (10278) SWINFORD (11239) TANWORTH-IN-ARDEN (10328) THROCKMORTON (10043) TODDINGTON (10302) TWYNING (10044) TYSOE (10345) UPTON SNODSBURY (10084) WADBOROUGH (10045) WELFORD (10398) WESTON-UNDER-WETHERLEY (10406) WOOLSTONE (10306) YELVERTOFT (10432)	ABBOTTS MORTON (10150) ADMINGTON (10338) ASHORNE (10380) ASTON MAGNA (10317) ASTON SOMERVILLE (10025) BASCOTE (10381) BIRLINGHAM (14761) BRETTFORD (10428) BROCKHILL (17811) BROUGHTON HACKET (10068) BUTLERS MARSTON (10319) CHURCHOVER (COTON ROAD) (10423) COMBROOK (10335) CORLEY (10461) DEFFORD LODGE HILL (10056) DORSINGTON (10320) DUMBLETON (10280) DUNNINGTON (10149) EARLS COMMON (18128) FLECKNOE (15134) GAYDON (10384) GLEBE FARM (11222) GRANGE FARM (11223) GREAT WASHBOURNE (10269) KNIGHTCOTE (10386) LAWFORD HEATH (10424) LOWER SHUCKBURGH (10426) LOWER STRENSHAM (BAUGHTON LANE) (18005) NAUNTON BEAUCHAMP (10020) OLD MILVERTON (10322) OXHILL (10323) PEBWORTH MIDDLESEX (10059) PRESTON-ON-STOUR (10324) PRIORS HARDWICK (10395) RADWAY (10325) RIDGWAY (10176) ROUS LENCH (10174) SALE GREEN (17926) SIBFORD FERRIS (10327) SNEACHILL (10083) SNOWDON LODGE (11237) STANTON (GLOUCESTERSHIRE) (10315) STAVERTON (10396) STOULTON (HAW BRIDGE) (10023) STOULTON (WINDMILL LANE) (10042) STRENSHAM INTAKE (14491) STRETTON-ON-FOSSE (10344) TARDEBIGGE (18649) TEWKESBURY (LINCOLN GREEN LANE) (18009) TILES FORD PARK (10024) ULLENHALL (10346) WELLESBOURNE - WALTON ROAD (STW) (19848) WHICHFORD (10347) WHITTINGTON (NEAR MOTORWAY) (10088) WHITTINGTON EAST (17817) WILLOUGHBY (10397) WINWICK (10399) WORMINGTON (10314) WORMLEIGHTON (10400)

To find out more about how the RBCS assessment was undertaken please refer to the RBCS Technical Summary and for detail relating to how catchments performed see the RBCS tables included within the supporting documentation.

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### Key Stakeholders

Working together with our stakeholders is key to the success of the DWMP, especially recognising that there are opportunities when working together to have wider benefits than just improvements to the wastewater system. **Table 2** summarises the key stakeholders and organisations covering this SPA. During the summer of 2020 we shared the findings of our BRAVA analysis with stakeholders through a customised GIS platform. This was supported by a series of workshops. Within this platform we also shared our understanding of wider surface/river flood risks across our catchments, with the intention of identifying potential future partnership working to incorporate within our DWMP development. As part of the publication of our dDWMP we held workshops with stakeholders to outline its content and explain how to feedback comments during the three-month consultation period. A key element of these workshops focussed on identifying any further partnership working opportunities, with subsequent discussions taking place thereafter to collate further detail. Additional detail on how we work collaboratively to develop partnership schemes are provided in ‘Appendix 8 – Working Together and Developing Partnership Working Opportunities’, with details of schemes within this SPA summarised in the next part of this document.

**Table 2:** Summary of the key stakeholders and organisations we are working with

Local Planning Authorities	Lead Local Flood Authorities	Other
Birmingham	Birmingham	Environment Agency
Bromsgrove	Coventry	Natural England
Cherwell	Gloucestershire	River Severn Partnership
Cotswold	Leicestershire	Severn Rivers Trust
Coventry	Northamptonshire	Warwickshire Avon CaBA Group
Daventry	Oxfordshire	Warwickshire Wildlife Trust
Harborough	Solihull	
North Warwickshire	Warwickshire	
Nuneaton and Bedworth	Worcestershire	
Redditch		
Rugby		
Solihull		
Stratford-on-Avon		
Tewkesbury		
Warwick		
Wychavon		

We’ve produced a lookup spreadsheet in the supporting documentation which will enable stakeholders to filter by SPA, Local Planning Authority or LLFA to determine which catchments are of particular interest within the operational area. This is available within the supporting documentation folder which accompanies the publication of our DWMP.

### Collaborative working opportunities in the Avon SPA

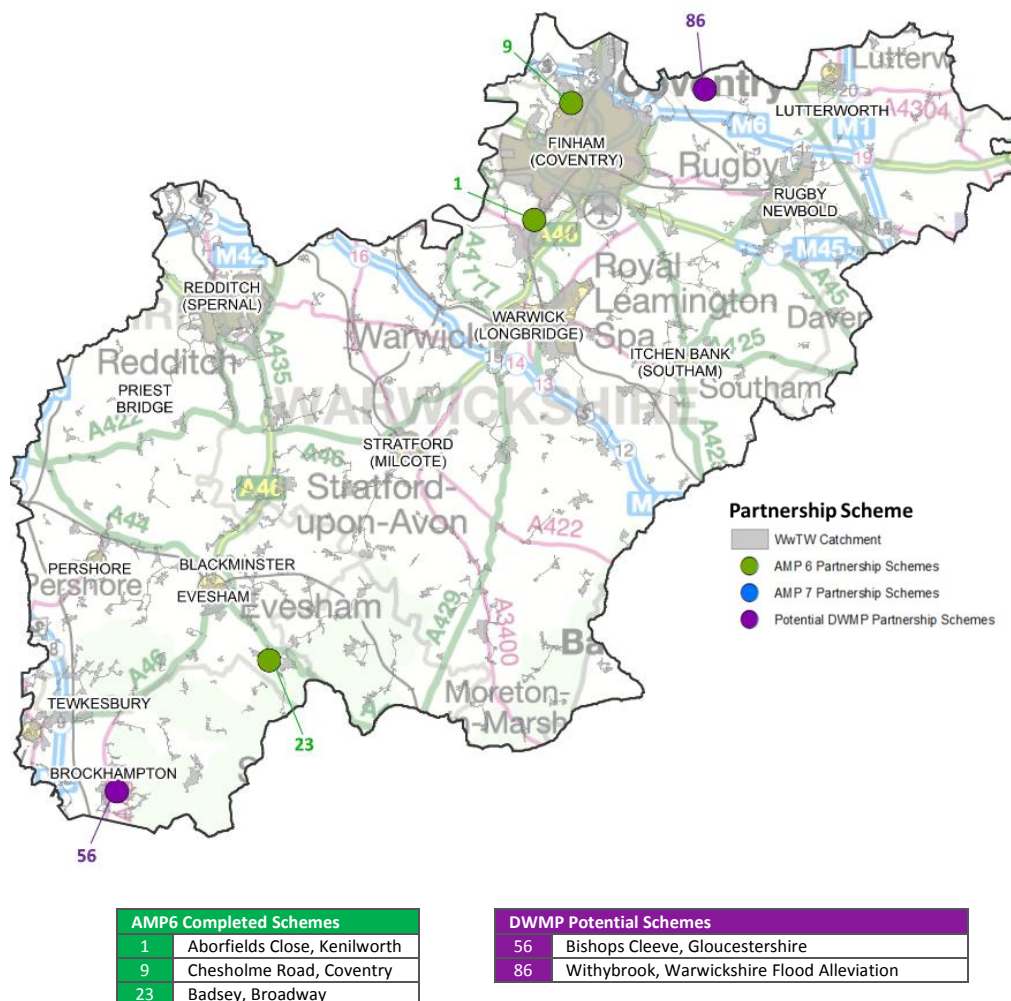
As part of our normal day to day activities we work closely with other Risk Management Authorities (RMA) to support and develop collaborative working opportunities. This includes the reduction of the risk of fluvial flooding whereby the public sewerage system can get inundated by high river flows and where joint solutions to improve surface water management can deliver multiple source flood benefit. Our DWMP approach builds on existing practices we already have in place to engage with stakeholders and so we envisage the outputs of DWMP will help reinforce this, both as part of our ongoing AMP7 programme but also in readiness for AMP8. This activity is firstly aimed at supporting the Environment Agency (EA) with the six-year Flood and Coastal Erosion Risk Management (FCERM) investment programme running from 1 April 2021 to 31 March 2027 to better protect 336,000 homes and non-residential properties. We also work with the Lead Local Flood Authorities (LLFAs), the Local Planning Authorities and other drainage body owners as part of our collaborative flood resilience approach.

With the six-year programme covering 2021 to 2027, the DWMP Cycle 1 planning horizon (2025-2050) will only overlap for the last two years of Flood and Coastal Erosion Risk Management (FCERM) schemes within this

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programme. As part of our ongoing engagement, we are working with the EA, LLFAs and other RMAs to support the development of (and where viable the delivery of) potential FCERM schemes and studies within the Avon SPA. To accompany our fDWMP we have produced a separate appendix ('Appendix 8') which provides more background on how the identification and development of co-creation opportunities forms an integral element of how we work and how this will support partnership opportunities emanating from our DWMP.

Below is a map of the Avon SPA area showing the joint schemes we have delivered in AMP6 (2015-2020), and those which have been, or are currently being, developed for anticipated delivery in AMP7 (2020-2025) In addition, we have included the locations of schemes which, based on current information, are envisaged to be delivered post 2025 as part of our DWMP. Ultimate delivery will be subject to completion of ongoing feasibility to determine the most appropriate cost beneficial solution and alignment of funding contributions.



**Figure 2:** Map showing AMP6, and programmed AMP7 partnership schemes. We have also included locations on indicative schemes subject to ongoing discussions with partners. (Note: Scheme numbers are not sequential as they reference back to the longlist included in Appendix 8).

For DWMP locations we have various levels of scheme maturity, but on the map in **Figure 2** we have only shown locations where a scheme has partners engaged with good progress in working together towards aligning resources, priority and funding. Within Appendix 8 we have also provided accompanying one-page summaries for these schemes. In addition, we have also provided a list of schemes in the appendix which are still subject to ongoing discussions, for which we have collated a short textual summary overview. Finally, we have provided a list of locations which are at an early conceptual stage. These are a list of scheme locations which will hopefully evolve into potential partnership schemes and have been identified through discussions

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with partners. These require further investigation to determine if they provide collaborative scheme opportunities, but we have included the names of these schemes to raise awareness that we have a pipeline (or conveyor belt) of potential partnership schemes which we will hope to continue to work collaboratively in readiness for implementation in the future. Clearly, all these schemes need to be caveated that their eventual delivery will be subject to completion of investigations and alignment of funding and resources. However, by inclusion of these schemes will hope to be able to demonstrate our continued aspiration to work together with our partners and build on the positive working relationships we have developed over the past decades.

**Table 3** below provides a summary of strategic partnerships and schemes we are currently aware of and will be supported by our DWMP partnership working aspirations:

*Table 3: List of strategic partnerships and potential partnership schemes identified for potential DWMP delivery within the SPA*

<p><b>A - Strategic partnerships</b></p> <ul style="list-style-type: none"> <li>➤ Sherbourne Valley Project</li> <li>➤ River Severn Partnership (Action on Avon)</li> <li>➤ Avon Green Recovery Project</li> </ul>
<p><b>B - Detailed schemes</b> (those where a scheme has partners engaged with good progress in working together towards aligning resources, priority and funding)</p> <ul style="list-style-type: none"> <li>➤ Bishops Cleeve, Gloucestershire</li> </ul>
<p><b>C - Schemes subject to ongoing discussion</b> (schemes which are subject to ongoing discussions to align resources, priority and funding)</p> <ul style="list-style-type: none"> <li>➤ Withybrook, Warwickshire Flood Alleviation Scheme</li> </ul>
<p><b>D - Conceptual schemes</b> (potential partnership locations identified following discussions with partners but subject to further investigations)</p> <ul style="list-style-type: none"> <li>➤ Yelvertoft, Northamptonshire</li> </ul>

Further details relating to those schemes in categories B, C and D are included within 'Appendix 8 – Working Together and Developing Partnership Working Opportunities'.

We are assessing the potential for SUDS retrofitting projects across Coventry to help manage the risks of climate change and increased extreme rainfall. We are liaising with other organisations working in or operating within the catchment with a view to taking a collaborative approach.

We are aware of or engaged in other catchment partnerships and initiatives in the Avon SPA. For instance, we are working with partners on the Avon adaptive pathway demonstrator project (Action on the Avon) as part of the River Severn Partnership. The Avon project is seeking to take a broader catchment-based approach to help manage water resources and flood risk whilst also enhancing biodiversity. It also aligns with our current bathing water Green Recovery project in the Avon catchment. We are also supporting the Sherbourne Valley Project, which seeks to rejuvenate the largely culverted River Sherbourne in Coventry.

We are part of the Severn Catchment Partnership which is a large multi-agency partnership with the following aim: - "To make the Severn Catchment Britain's most vibrant and resilient river network; where an exceptional quality of life, prosperous local economies and an outstanding natural environment is driven by a programme of innovation to reduce flood risk, secure future water resources and improve and deliver shared natural assets." We will continue to play our part in this partnership, and we will seek ways to align and collaborate on delivering ours as well as wider drainage and flood risk aspirations.

We will continue to seek and develop opportunities to collaborate with other RMAs to manage flood risk within the current 6-year programme. As part of the BRAVA consultation period in 2021 and workshops held to support the dissemination of our dDWMP publication in August 2022, we have worked closely with

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stakeholders and partners to identify future opportunities to align plans and to co-create potential schemes for potential inclusion in future FCERM programmes.

Additionally, the Avon SPA is included within the Severn River Basin Management Plan (RBMP) area which sets out environmental objectives and the programme of measures for protecting and improving the water environment.

The Avon SPA falls within the Severn Flood Risk Management Plan (FRMP) area. FRMPs are strategic statutory plans which have measures for high-risk Flood Risk Areas (FRAs). FRMPs have been developed by the Environment Agency, working together with LLFAs and RMAs. The second cycle FRMP for the Severn River Basin District covering the period 2021 – 2027 was updated in December 2022. We contributed to this FRMP update by developing and incorporating measures. We also worked with other RMAs to support other measures and we fed back to the consultation. The findings of our fDWMP and subsequent investment in our PR24 business plan will support the alignment of other strategic plans and support facilitation of collaborative/partnership working.

Within the Avon SPA, there are 4 FRAs in the FRMP. The FRAs are catchment areas deemed to be at significant risk of flooding from surface water and/or rivers and the sea. Where Flood Risk Areas have been identified we are supporting the Environment Agency and LLFAs to better understand and address the risk where applicable. We will seek opportunities to align FRMP activities with DWMP strategies in this current second cycle and future FRMP cycles.

### **River Basin Alignment**

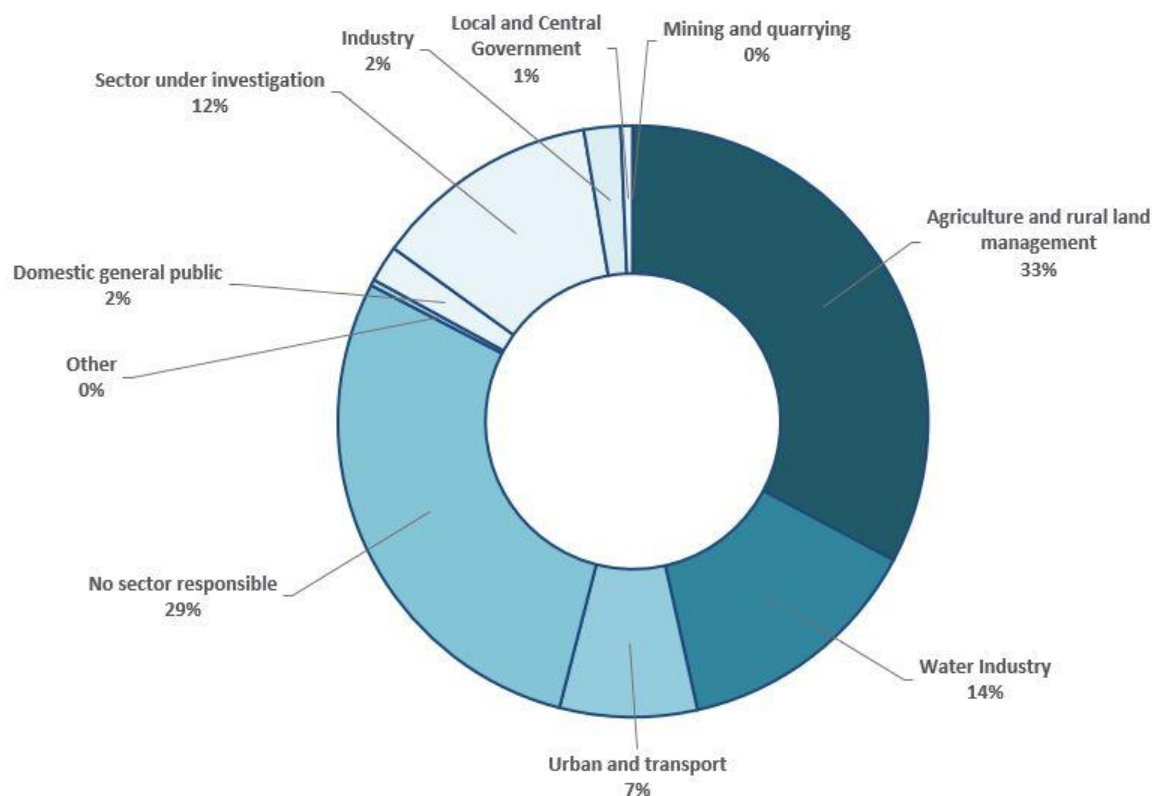
A core aim of our DWMP is to support river basin objectives and comply with requirements set out in the Environment Act 2021 to prevent deterioration of the water environment and improve water quality by managing water in river basin districts. Based on Environment Agency measures river health, waterbodies that have a classification status of less than 'Good' are classified based on their Reasons for Not Achieving Good Status (RNAGS).

As part of our River Pledge, our aim is for our operations to not be the reason for unhealthy rivers by 2030 based on Environment Agency measures (RNAGS). Working together with the Environment Agency we have shared information to support the development of our AMP8 Water Industry National Environmental Programme (WINEP) list. Our draft WINEP proposals were submitted to the Environment Agency at the end of November 2022. Within our WINEP we have included work needed to meet the Government's requirement relating to storm overflow performance as required to comply with the Storm Overflow Discharge Reduction Plan (SODRP). Further detail on how our DWMP aligns with the SODRP is included in 'Appendix 6 – Alignment to the Storm Overflow Discharge Reduction Plan'. In the meantime, we will also continue to educate, advocate and use our convening powers to help others to address their issues too.

Across the Avon SPA there are 75 river water bodies. When looking at rivers reaching Good Ecological Status across the SPA, the EA summary information outlines that 13.7% of the problem is caused by Water Industry

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activity and 86.3% by other reasons. **Figure 3** shows the breakdown of RNAGS responsibility by sector.



**Figure 3:** Reasons for Not Achieving Good Ecological Status by Sector and Activity across the Avon SPA

Based on our draft WINEP we are intending to improve 21 river reaches by 2030, with a total of 93 to be improved by 2050 in line with the SODRP requirements. This includes 14 river reaches we are improving in AMP7 by 2025 (**Table 4**) and 7 proposed in our AMP8 WINEP programme (**Table 5**).

**Table 4:** River reaches identified for improvement in AMP7 (by 2025)

WFD Waterbody ID	WFD Waterbody Catchment
GB109054044540	Sowe - conf Withy Bk to conf R Avon
GB109054044140	Leam - conf R Itchen to conf R Avon
GB109054043730	Sherbourne Bk - source to conf R Avon
GB109054043800	Gog Bk - source to conf R Avon
GB109054044140	Leam - conf R Itchen to conf R Avon
GB109054044620	Sherbourne - source to conf R Sowe
GB109054044140	Leam - conf R Itchen to conf R Avon
GB109054044470	Finham Bk - source to conf Canley Bk
GB109054044140	Leam - conf R Itchen to conf R Avon
GB109054044140	Leam - conf R Itchen to conf R Avon
GB109054044401	Avon- Tramway Br Stratford to Workman Br Evesham
GB109054044660	Sowe - conf Breach Bk to conf Withy Bk
GB109054043920	Avon – Claycot-on-Yelvertoft Bk to conf R Sowe
GB109054044620	Sherbourne - source to conf R Sowe
GB109054043920	Avon – Claycot-on-Yelvertoft Bk to conf R Sowe
GB109054044402	Avon (Wark) conf R Leam to Tramway Br, Stratford
GB109054043920	Avon – Claycot-on-Yelvertoft Bk to conf R Sowe
GB104028042430	Wem Brook from Source to River Anker
GB109054044401	Avon- Tramway Br Stratford to Workman Br Evesham
GB109054044620	Sherbourne - source to conf R Sowe
GB109054044401	Avon- Tramway Br Stratford to Workman Br Evesham

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WFD Waterbody ID	WFD Waterbody Catchment
GB109054044520	Canley Bk - source to conf with Finham Bk
GB109054044620	Sherbourne - source to conf R Sowe
GB109054039490	Marchfont Bk - source to conf R Avon
GB109054044401	Avon- Tramway Br Stratford to Workman Br Evesham
GB109054043900	Clifton Bk - source to conf R Avon
GB109054044401	Avon- Tramway Br Stratford to Workman Br Evesham
GB109054044401	Avon- Tramway Br Stratford to Workman Br Evesham
GB109054043900	Clifton Bk - source to conf R Avon
GB109054044401	Avon- Tramway Br Stratford to Workman Br Evesham

**Table 5:** River reaches identified for improvement in our AMP8 WINEP submission (by 2030)

WFD Waterbody ID	WFD Waterbody Catchment
GB109054043940	Swift source to conf Avon
GB109054044090	Stowe - source to conf R Itchen
GB109054043780	Arrow - Spennall Hall Fm, Studley to conf R Alne
GB109054044402	Avon (Wark) conf R Leam to Tramway Br, Stratford
GB109054043890	Arrow - source to Spennall Hall Fm, Studley
GB104028042571	Blythe from Temple Balsall Brook to Patrick Bridge
GB109054043720	Alne - conf Claverdon Bk to conf R Arrow

### Discharges to sensitive waters and risk to groundwater abstraction zones

As part of our fdWMP we have undertaken additional analysis to understand the potential risk associated with foul or combined sewers that run through or near to a designated Drinking Water Safeguard Zones, also known as Strategic Groundwater Protection Zones (SGZs). Across the Severn Trent wastewater region there are sixteen SGZs, of which there are four within the Avon SPA, albeit one is not overlaid by a WwTW catchment. **Table 6** below summarises the SGZs within this L2 SPA and the relevant L3 WwTW catchment:

**Table 6:** SGZs and their respective Level 3 WwTWs and Level 2 Strategic Planning Areas.  
References are not sequential as they relate to the longlist in Appendix 10.

Ref	SGZ Code	Level 3 WwTW Name/Ref	Level 2 Strategic Planning Area
1	GWSGZ0016	Warwick (Longbridge) 10354	Avon
2	GWSGZ0017	Blockley 10329	Avon
11	GWSGZ0200	No WwTW	Avon
13	GWSGZ0204	Redditch (Spennall) 10168	Avon

In the absence of an industry-wide approved standard to assess such SPZ risk, we have undertaken analysis to help inform the potential of sewer exfiltration which could pose a risk to an SGZ. This analysis used sewer records within/a 500m buffer of a SPZ, together with structural sewer condition surveys (CCTV) and groundwater levels relative to sewer depths, to inform the likelihood of meaningful exfiltration sources. Further details are provided within 'Appendix 10 – Drinking Water Safeguarding Zones'. Whilst our analysis suggests the underlying risk to be low, we would recommend industry research be commissioned to ensure a consistent approach be adopted ahead of the next DWMP.

### Assessment of SPA Catchment Needs

As part of our Baseline Risk and Vulnerability Assessments (BRAVA) we have assessed each catchment against six Common Planning Objectives and four Opportunity Indicators (**Table 8**). More detail about how these have been developed and measured can be found in our 'Technical Summaries' section. Our Planning Objectives have allowed us to understand what the priorities of our catchments within this SPA are and where our strategies should be focussed to deliver a best plan for our customers and stakeholders. Each Planning Objective and Opportunity Indicator have been scored according to 3 priority risk bands (band 0/1/2) which are explained in **Table 7a** and **Table 7b**. These scores are based on a no intervention scenario which gives us the scale of the problem that needs to be addressed by the DWMP and does not mean that our plan is to do nothing. We have collated the catchment level scores at SPA level, according to the DWMP Framework, so that

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we can share what the current and future needs are within the SPA to identify the high-level strategic direction needed to address these needs. A catchment Level detailed breakdown can be found in the supporting documentation.

**Table 7a:** 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 7b:** 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 8:** Needs of the Avon SPA in relation to the Planning Objectives and Opportunity Indicators.

Ref	Planning Objective	2020	2050	Comments
<b>Common Planning Objectives</b>				
CPO1	Internal Sewer Flooding Risk	0	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	1	N/A	Based on the average number of pollution incidents reported over the 3 year period from 1st April 2017 to 31st March 2020.
CPO3	Sewer Collapse Risk	0	N/A	Based on the average number of sewer collapses reported over the 3 year period from 1st April 2017 to 31st March 2020.
CPO4	Risk of internal sewer flooding in a 1 in 50-year storm	2	2	Based on the Ofwat guidance for Risk of Sewer Flooding in a Storm Methodology and incorporating enhancements to align with the assessment of surface water and fluvial flood risks assessments used by Environment Agency/LLFAs.
CPO5	Storm Overflow Performance	0	0	Based on the Water UK 21 <sup>st</sup> Century Drainage Capacity Assessment Framework to assess storm overflow performance.
CPO6	Risk of wastewater treatment works quality compliance failure	1	2	This considers pressures on flow and quality permit compliance at Wastewater Treatment Works, plus any technological limitations or physical site conditions which could limit available solutions.
<b>Opportunity Indicators</b>				
OI1	Risk of surface, fluvial and groundwater flooding	1	N/A	This indicator uses the Environment Agency surface water flood risk maps to identify properties at risk of surface water flooding which could potentially benefit from co-created drainage and wastewater solutions.
OI2	Sustainable accommodation of future growth	0	N/A	This indicator looks at how likely it is that new development would connect to a foul/combined sewer as no suitable surface water sewers are available or the ground conditions limit use of Sustainable Drainage Systems (SuDS).
OI3	Effective wastewater asset resilience	1	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	This indicator assesses potential opportunities to integrate DWMP surface water management strategies to offset groundwater and river abstraction constraint within WRMP.

## Developing Options

To help us develop a best value, long-term approach to managing the future risks within each catchment we have assessed each catchment against a series of interventions. This ensures a good understanding of what options may be viable to consider as part of our long-term plan. The DWMP Framework identifies a long list of ‘generic options’, which fall into three main themes; reduce demand, optimise existing capacity or increase supply of capacity (Figure 4). We have grouped these tactical interventions into Intervention Themes (Table 9), and a detailed explanation of these options and how we have considered them are included in the ODA Screening Technical Summary.

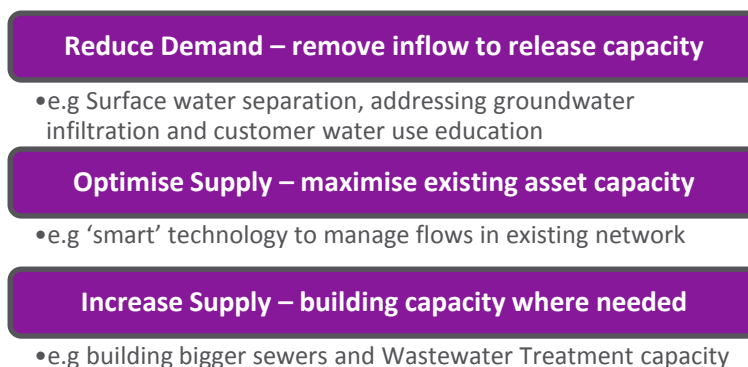


Figure 4: Main categories of options addressed through the DWMP

Table 9: Summary of the Intervention Themes considered when developing options at catchment level

Type		Intervention Theme	Aim of Intervention
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	Customer awareness on the impact of sewer misuse, water consumption and increase of impermeable area creep. <b>This is a company level activity.</b>
		Surface Water Inflow Management	Managing surface water entering the sewer network through surface water separation and SuDS strategies.
		Infiltration Management	Sealing of pipes to reduce groundwater ingress due to changes in groundwater tables.
Optimise	Sewerage Network	Managing Exceedance Flow Paths	Mitigating sewer exceedance flood risk by managing flow paths. <b>This is a business-as-usual activity.</b>
		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 to dynamically manage flows in the wastewater system during heavy rainfall.
		Operational Performance Management	Maintenance of the network such as routine cleanse to reduce blockage risk. <b>This is a business-as-usual activity.</b>
	Wastewater Treatment	River Catchment Flexible Permitting	Use of river reach permitting to meet environmental objectives for the watercourse.
		WwTW Treatment Optimisation	Optimising existing treatment capacity by transferring flows to an alternative WwTW with spare headroom.
		Storm Overflow Effluent Treatment	Treatment of storm overflow effluent to improve the water quality before release into sensitive environments.
		Product Recovery	Using technology to extract products from the flows into the WwTW. This is a bespoke option rather than within strategic DWMP scope.

## FDWMP: Detailed Level 2 Strategic Planning Area Assessment (Avon)

Type		Intervention Theme	Aim of Intervention
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. <b>This is a business-as-usual activity covered through capital maintenance plans.</b>
	Wastewater Treatment	WwTW Capacity Upgrades	Traditional capacity upgrades including building additional treatment capacity.
		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. <b>This is a company level activity.</b>	
	Investigate and Monitor	Understand root cause and risk. <b>This is a company level activity.</b>	
	Future Technology	To await or develop new technology to support with meeting objectives. <b>This is a company level activity.</b>	

Each of the 96 WwTW catchments within the Avon SPA have been assessed against each of the intervention options. These have been assessed based on the individual characteristics of each catchment using in-depth knowledge of the catchment by our Technical Experts.

The intention of the assessment was to understand what solutions may be viable within a catchment, enabling the interventions to be married against the needs to determine which solutions may be viable. It is unlikely that a single intervention would be applicable to the entire catchment as some parts of a catchment may be amenable to an intervention which would not work elsewhere in the catchment. However, the purpose of this exercise is to understand what could comprise feasible interventions which should be assessed in more detail as part of Option Development and Appraisal.

The findings of the assessment of interventions are summarised for 96 catchments in this SPA in **Figure 5**, which indicates which options are the most feasible. Based on an assessment of catchment needs and characteristics, the larger text indicates which interventions are likely to be more viable across all catchments in the SPA. This does not mean the less viable interventions will be discounted altogether as once we get to the next phase of detailed optioneering there may be parts of a catchment where these interventions would be used, but our analysis indicates they are not primary interventions. Overall, this indicates that the main interventions worth considering further are traditional interventions to increase supply of capacity within the wastewater network or look at options to reduce inflow into the sewerage system through improved surface water inflow management. The added benefit of the latter being this also provides opportunities to work with other flood risk management authorities to deliver wider flooding benefits.

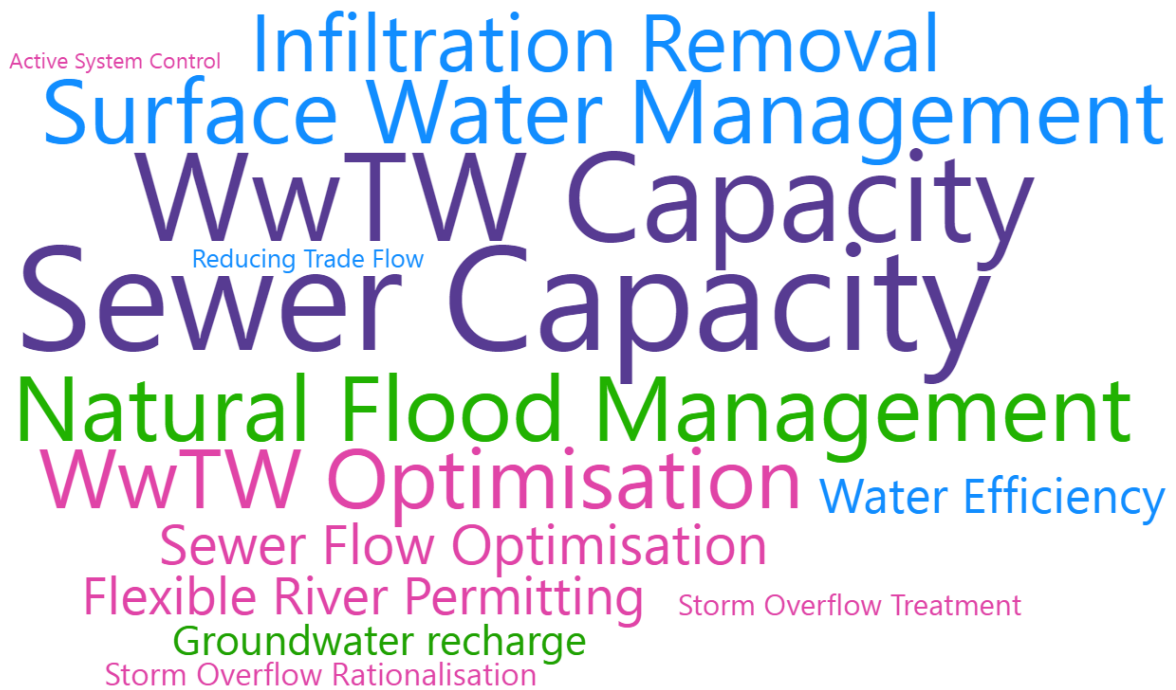


Figure 5: Summary of the most viable options available within the Avon SPA

## Interventions

As part of our Option Development and Appraisal assessment we have focussed on traditional interventions to represent the 'supply' activities, and more nature-based surface water removal options to achieve 'demand' reduction. The assessments from the option viability will be used to inform project development during the future stages of our catchment management.

### Internal sewer flooding in a 1 in 50-year storm

As part of assessing properties at risk of internal sewer flooding in a 1 in 50-year storm we have looked at the different combinations of climate change and population growth resulting from new development. This assessed zero, 2°C and 4°C climate change scenarios combined with growth based on ONS and assuming all development allocations identified in Local Plans come to fruition. In line with the recommendations of the Climate Change Committee's 'Independent Assessment of UK Climate Risk' (June 2021) to 'plan for 2°C, prepare for 4°C', we have aligned our DWMP Core Pathway to the 2°C climate scenario and ONS growth projections. This combination is considered to be the most plausible representation of the future based on current best available information. However, we have also modelled the alternative combinations based on a 4°C climate change scenario and Local Plan growth. **Figure 6** shows the future risks assuming no interventions.

## FDWMP: Detailed Level 2 Strategic Planning Area Assessment (Avon)

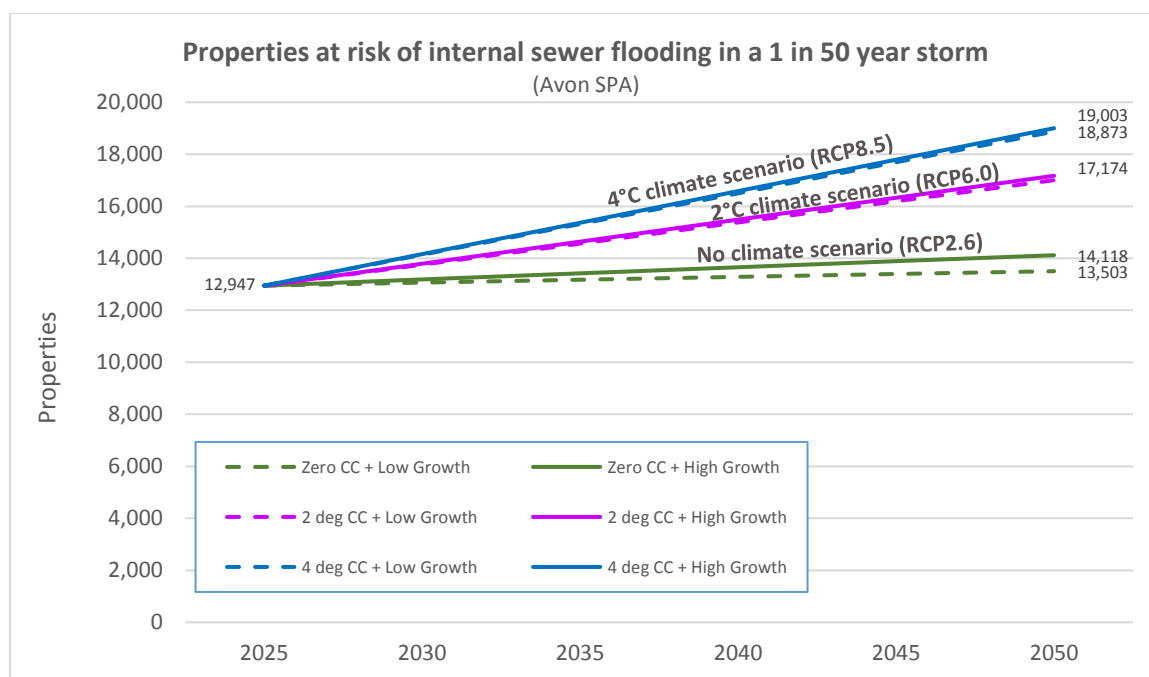


Figure 6: The number of properties at risk of flooding in a 1 in 50 year storm without interventions

Within the Avon SPA region our modelling indicates that currently there are around 13,000 properties which could be at risk of sewer flooding from a 1 in 50-year storm. This amounts to approximately 2.63% of connected properties. By 2050, assuming no upgrades were undertaken, this would increase by 31% to just over 17,000 properties. In terms of percentage of properties at risk, we expect local planning rules to ensure no new properties are built in areas deemed to be at risk of flooding. Consequently, over the next 25 years the increase in new property connections will naturally dilute the percentage of properties at risk. For that reason, we do not believe it is appropriate to represent risk as a percentage of properties.

**Table 10** summarises the current and future flood risks based on our assessment of priority risk level for a 2°C global warming scenario. Our immediate focus is to mitigate the risks associated with catchments forecast to fall within band 2 'Short Term priority' by 2035.

Table 10: Assessment of risk of sewer flooding in a 1 in 50 year storm showing which catchments fall within which priority bands (NOTE: This table is listed in order of its population size)

Ref	Catchment Name	Population	2020	2025	2030	2035	2050
10451	FINHAM (COVENTRY)	477,671	1	1	1	1	1
10354	WARWICK (LONGBRIDGE)	108,466	1	1	1	1	1
10429	RUGBY NEWBOLD	105,347	0	0	1	1	1
10168	REDDITCH (SPERNAL)	80,096	0	0	0	0	0
10348	STRATFORD (MILCOTE)	38,497	0	0	0	0	0
10313	TEWKESBURY	29,374	0	0	0	0	0
10035	EVESHAM	28,826	1	1	1	1	2
10308	BROCKHAMPTON	17,017	1	1	1	1	1
10027	BLACKMINSTER	16,231	0	0	0	0	0
10434	ITCHEN BANK (SOUTHAM)	14,883	1	1	1	1	1
10163	PRIEST BRIDGE	13,871	0	0	0	0	0
10040	PERSHORE	11,489	0	0	0	0	0
11232	LUTTERWORTH	11,320	1	1	1	1	2
10152	ALVECHURCH	10,023	0	0	0	0	0
10454	BEDWORTH (MARSTON LANE)	9,932	2	2	2	2	2
10151	ALCESTER	8,750	0	0	0	0	0
10154	BIDFORD-ON-AVON	7,994	0	0	0	0	0
10332	SHIPSTON FELL MILL	7,154	0	0	0	0	0
10355	WELLESBOURNE	6,875	0	0	0	0	0
10433	WOLSTON	5,887	0	0	0	0	0
10305	WINCHCOMBE	5,040	0	0	0	0	0
10051	HONEYBOURNE	4,867	0	0	0	0	0

## FDWMP: Detailed Level 2 Strategic Planning Area Assessment (Avon)

Ref	Catchment Name	Population	2020	2025	2030	2035	2050
10287	BROADWAY	3,822	0	0	0	0	0
10028	BREDON	3,641	0	0	0	0	0
10378	WOOTTON WAWEN	3,580	0	0	0	0	0
10030	CROPTHORNE HEATH	2,742	0	0	0	0	0
10148	ASTWOOD BANK	2,708	0	0	0	0	0
10402	DUNCHURCH	2,548	0	0	0	0	0
10404	KILSBY	2,429	0	0	0	0	0
10161	HARVINGTON WORKS	2,408	0	0	0	0	0
10403	FRANKTON	2,324	0	0	0	0	0
10430	KINETON-STW	2,314	0	0	0	1	1
10330	CHIPPING CAMPDEN	2,284	0	0	0	0	0
10329	BLOCKLEY	1,913	0	0	0	0	0
10353	ROWINGTON	1,831	0	0	0	1	1
10401	BRAUNSTON	1,783	0	0	0	0	0
11229	KIMCOTE	1,739	0	0	0	1	1
10166	INKBERROW	1,716	0	0	0	0	0
10044	TWYNING	1,513	2	2	2	2	2
11248	SOUTH KILWORTH	1,389	1	1	1	1	1
10350	CHERINGTON	1,321	1	1	1	1	1
10282	ALDERTON	1,211	0	0	0	0	0
10306	WOOLSTONE	1,123	0	0	0	0	0
10033	ECKINGTON	1,122	0	0	0	1	1
10278	STOKE ORCHARD	1,122	0	0	0	0	0
10398	WELFORD	1,116	0	0	0	0	0
10466	MONKS KIRBY	1,100	2	2	2	2	2
10405	BRINKLOW	1,058	0	0	0	0	0
10326	SNITTERFIELD	1,049	0	0	0	0	1
10345	TYSOE	1,006	0	0	0	0	0
10321	ETTINGTON	986	0	0	0	0	0
10097	CROWLE (WORCESTER)	985	0	0	0	1	1
10461	CORLEY	966	NA	NA	NA	NA	NA
10176	RIDGEWAY	957	NA	NA	NA	NA	NA
10393	NAPTON WRW	937	0	0	0	0	1
10285	BECKFORD	885	NA	NA	NA	NA	NA
10351	LEEK WOOTTON	864	0	0	0	0	0
10349	CLAVERDON	837	0	0	0	0	0
10022	EDGEWATER	828	NA	NA	NA	NA	NA
10327	SIBFORD FERRIS	825	NA	NA	NA	NA	NA
10425	FENNY COMPTON	797	0	0	0	0	0
10341	LONG COMPTON	776	1	1	1	1	2
10389	LIGHTHORNE HEATH	758	0	0	0	0	0
10432	YELVERTOFT	756	0	0	0	0	0
10406	WESTON-UNDER-WETHERLEY	746	0	0	0	0	0
10055	LOWER MOOR	711	NA	NA	NA	NA	NA
10340	ILMINGTON	711	2	2	2	2	2
10265	ASHTON-U-HILL	708	NA	NA	NA	NA	NA
10392	NASEBY WRW	690	0	0	0	0	0
10026	BISHAMPTON	686	2	2	2	2	2
10318	BEARLEY	672	0	0	0	0	0
10427	BUBBENHALL	591	0	0	0	0	0
11239	SWINFORD	589	2	2	2	2	2
10319	BUTLERS MARSTON	582	NA	NA	NA	NA	NA
10343	NETHERCOTE	560	1	1	1	1	1
10324	PRESTON-ON-STOUR	559	NA	NA	NA	NA	NA
10342	NORTON LINDSEY	554	0	0	0	0	0
10396	STAVERTON	488	NA	NA	NA	NA	NA
10039	PEOPLETON	471	0	0	0	0	0
10390	MORETON MORRELL	457	0	0	0	0	0
10385	HARBOROUGH MAGNA	443	0	0	0	0	0
10323	OXHILL	435	NA	NA	NA	NA	NA
10156	CHURCH LENCH	423	NA	NA	NA	NA	NA
10384	GAYDON	394	NA	NA	NA	NA	NA
10032	DEFFORD VILLAGE	386	NA	NA	NA	NA	NA
10397	WILLOUGHBY	385	NA	NA	NA	NA	NA
10165	FLYFORD FLAVELL	373	NA	NA	NA	NA	NA
10387	LILBOURNE	373	NA	NA	NA	NA	NA
10394	NORTHEND	372	2	2	2	2	2
10344	STRETTON-ON-FOSSE	371	NA	NA	NA	NA	NA
10346	ULLENHALL	366	NA	NA	NA	NA	NA
10388	LIGHTHORNE	353	2	2	2	2	2
10382	CHURCH LAWFORD	340	1	1	2	2	2
17618	HANBURY (WORCESTERSHIRE)	326	2	2	2	2	2
10302	TODDINGTON	320	0	0	0	0	0

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Ref	Catchment Name	Population	2020	2025	2030	2035	2050
10280	DUMBLETON	305	NA	NA	NA	NA	NA
10328	TANWORTH-IN-ARDEN	305	0	0	0	0	0
10084	UPTON SNODSBURY	295	NA	NA	NA	NA	NA
10347	WHICHFORD	292	NA	NA	NA	NA	NA
10046	LITTLE COMBERTON WKS	286	NA	NA	NA	NA	NA
10325	RADWAY	260	NA	NA	NA	NA	NA
10025	ASTON SOMERVILLE	228	NA	NA	NA	NA	NA
10047	HINTON-ON-THE-GREEN	215	0	0	0	0	0
10315	STANTON (GLOUCESTERSHIRE)	212	NA	NA	NA	NA	NA
10312	LAVERTON	207	0	0	0	0	0
10052	LOWER STRENSHAM	207	NA	NA	NA	NA	NA
10383	CHURCHOVER	204	0	0	0	0	0
10317	ASTON MAGNA	203	NA	NA	NA	NA	NA
14761	BIRLINGHAM	203	NA	NA	NA	NA	NA
10023	STOULTON (HAW BRIDGE)	184	NA	NA	NA	NA	NA
15134	FLECKNOE	179	NA	NA	NA	NA	NA
10386	KNIGHTCOTE	179	NA	NA	NA	NA	NA
10167	KINGTON	172	NA	NA	NA	NA	NA
10068	BROUGHTON HACKET	158	NA	NA	NA	NA	NA
10335	COMBROOK	158	NA	NA	NA	NA	NA
10424	LAWFORD HEATH	158	NA	NA	NA	NA	NA
10391	MORETON PADDOX	158	0	0	0	0	0
10395	PRIORS HARDWICK	154	NA	NA	NA	NA	NA
10380	ASHORNE	146	NA	NA	NA	NA	NA
10174	ROUS LENCH	135	NA	NA	NA	NA	NA
11235	SHAWELL	125	0	0	0	0	0
17926	SALE GREEN	123	NA	NA	NA	NA	NA
10314	WORMINGTON	110	NA	NA	NA	NA	NA
10428	BRETFORD	101	NA	NA	NA	NA	NA
10045	WADBOROUGH	101	1	1	1	1	1
10043	THROCKMORTON	100	NA	NA	NA	NA	NA
10150	ABBOTTS MORTON	94	NA	NA	NA	NA	NA
10149	DUNNINGTON	91	0	0	0	0	0
10400	WORMLEIGHTON	89	NA	NA	NA	NA	NA
10338	ADMINGTON	88	NA	NA	NA	NA	NA
10088	WHITTINGTON (NEAR MOTORWAY)	88	NA	NA	NA	NA	NA
18128	EARLS COMMON	87	NA	NA	NA	NA	NA
10381	BASCOTE	81	NA	NA	NA	NA	NA
10083	SNEACHILL	81	NA	NA	NA	NA	NA
10024	TILESFORD PARK	76	NA	NA	NA	NA	NA
10426	LOWER SHUCKBURGH	65	NA	NA	NA	NA	NA
10320	DORSINGTON	62	NA	NA	NA	NA	NA
10269	GREAT WASHBOURNE	62	NA	NA	NA	NA	NA
10020	NAUNTON BEAUCHAMP	61	NA	NA	NA	NA	NA
10322	OLD MILVERTON	58	NA	NA	NA	NA	NA
10056	DEFFORD LODGE HILL	44	NA	NA	NA	NA	NA
17817	WHITTINGTON EAST	42	NA	NA	NA	NA	NA
10399	WINWICK	36	NA	NA	NA	NA	NA
10423	CHURCHOVER (COTON ROAD)	35	NA	NA	NA	NA	NA
10059	PEBORTH MIDDLESEX	33	NA	NA	NA	NA	NA
10042	STOULTON (WINDMILL LANE)	32	NA	NA	NA	NA	NA
18009	TEWKESBURY (LINCOLN GREEN LANE)	21	NA	NA	NA	NA	NA
18005	LOWER STRENSHAM (BAUGHTON LN)	17	NA	NA	NA	NA	NA
14491	STRENSHAM INTAKE	17	NA	NA	NA	NA	NA
18649	TARDEBIGGE	5	NA	NA	NA	NA	NA
11237	SNOWDON LODGE	5	NA	NA	NA	NA	NA
11222	GLEBE FARM	4	NA	NA	NA	NA	NA
17811	BROCKHILL	2	NA	NA	NA	NA	NA
11223	GRANGE FARM	2	NA	NA	NA	NA	NA

### Investment Scenarios

In our dDWMP, we set out a preferred plan to meet our long-term aspiration to reduce internal property flooding to zero, in addition to providing alternative options. When looking at intervention options, we modelled three principal intervention themes:

- Traditional – building ‘grey’ sewer capacity interventions
- Blue / Green solutions - assessing three scenarios: 10%, 30% and 50% separation of roads and footpaths into other drainage systems like nature based ‘green’ solutions.

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- Hybrid – a mix of traditional ‘grey’ and nature based ‘green’ solutions. Where surface water interventions on their own do not meet the desired level of performance, we have reinforced any shortfall with traditional sewer-based solutions.

In terms of solution hierarchy, our preference is to prioritise blue/green nature-based interventions. At the time of our dDWMP we were not able to develop a best value plan as we wanted to ensure our DWMP best value assessments aligned with those being used to inform PR24. For our fDWMP we have now included best value assessments which include the valuation of customers willingness to pay, together with the wider benefits nature-based interventions would deliver. A key element of this is how much customers value reduction in sewer flooding and whilst historically this had been determined by customer research undertaken by individual companies, for PR24 this is being undertaken by Ofwat. The publication of this research was expected in December 2022 but is now not expected until February/March 2023. This is too late to inform our fDWMP, hence we have had to use our existing AMP7 valuations.

### **Our Best Value Plan (BVP)**

Unlike our dDWMP which provided costs for meeting different levels of performance by using traditional, surface water and hybrid interventions, for our fDWMP we have been able to develop a Best Value Plan (BVP) based on the optimal combination on interventions constrained by customers valuation of what they are willing to pay for. To value natural capital, we worked with our consultant Economic Insight to develop the Benefits Assessment Tool (BAT). This tool enabled us to assess Natural Capital against wider costs and benefits to identify which of our options provides the best value for customers and the environment. In addition to being used to inform our DWMP best value plan, this tool is also being utilised to develop our PR24 Business Plan across Water and Wastewater as well being used to inform our WINEP programme.

For the Avon SPA the BVP indicates investment would cost in the region of £117.9m under a 2°C climate scenario. Overall, this would see the percentage of properties at risk change from 2.63% to 1.82% by 2050, however the actual number of properties at a risk is expected to change from 12,947 to 12,436. This is despite interventions to alleviate risk to 14,568 properties over the next 25 years. The misalignment of % and ‘properties’ is due to the number of future properties which are forecast to be connected by 2050, as planning regulations will ensure new properties are built above flood levels and so this dilutes the percentage at risk calculation. Under a 4°C climate change scenario investment would need to increase to £151.22m.

### **Zero flooding aspiration**

Our long-term aspiration is to get to zero properties at risk from sewer flooding. To inform this, we have also appraised the cost to get to zero properties at risk by 2050. This approach uses the best value approach to determine the most beneficial long-term interventions for each catchment but assumes all these solutions would be affordable. For a 2°C climate scenario this would require investment levels in the region of £1,004.5m by 2050, increasing to £1,134.6m under a 4°C climate scenario.

### **Maintaining Current Risks Levels**

We have appraised what investment would be required to maintain current level of flood risk within each WwTW catchment. Again, we have used the best value intervention but included schemes with lower affordability to ensure property level catchment risk in maintained. Across the Avon SPA, maintaining current risk levels would require investment in the region of £163.4m under a 2°C climate scenario, increasing to £222.2m under a 4°C climate scenario.

**Figure 7** below graphically summarises the different investment scenarios:

## FDWMP: Detailed Level 2 Strategic Planning Area Assessment (Avon)

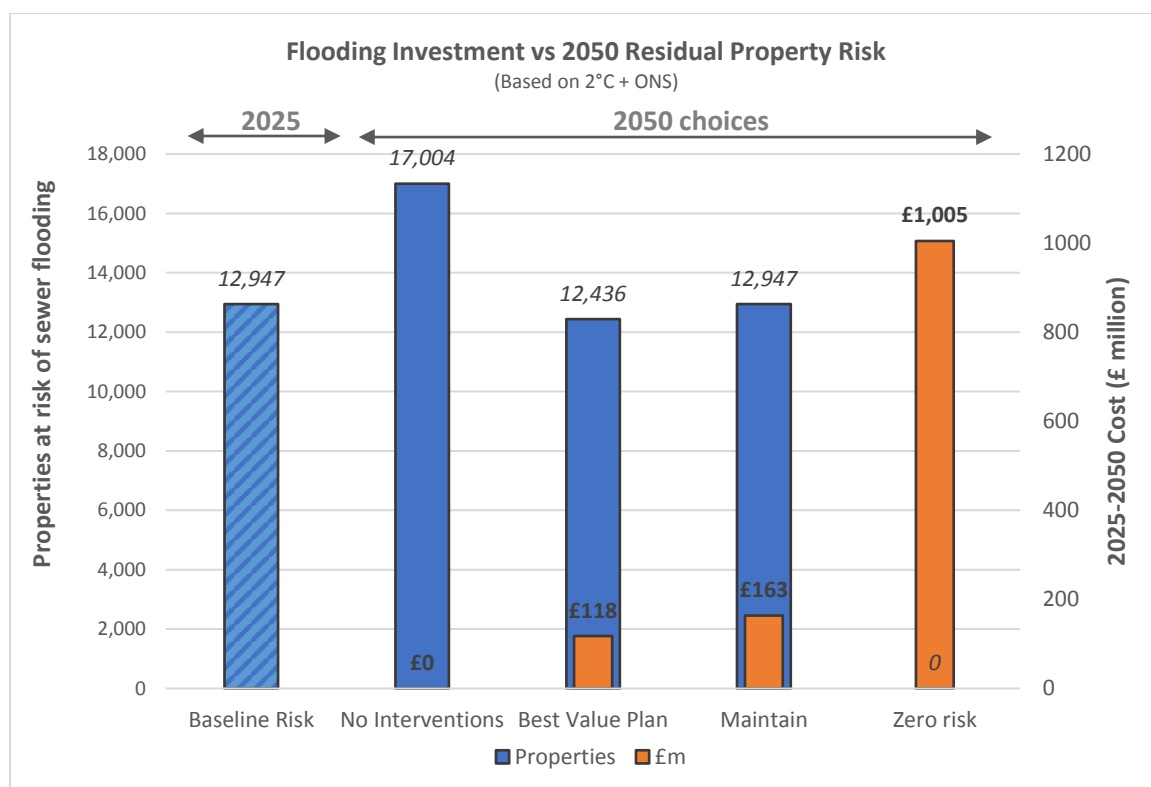


Figure 4: Graphical overview of flooding investment levels compared to residual properties at risk

### Storm Overflows

All our Storm Overflows are subject to permits issued by the Environment Agency which specify the standard which must be met before diluted effluent can be discharged into the environment during rainfall periods to help protect properties from flooding. We have assessed the performance of our storm overflows in line with the Common Planning Objective (CPO) which used the same scoring methodology as set out in the 2017 Capacity Assessment Framework (CAF). Using actual rainfall records over a recent 10-year period we have used our hydraulic sewer models to inform likely performance of our storm overflows in a 'typical year'. Note that these results will differ from reportable Event Duration Monitoring (EDM) as such spills are based on actual rainfall which fell across a catchment during a calendar year. Hence a wetter than average year is likely to be reflected in higher EDM activations (spills), with lower activations in drier years.

The findings of the assessment are summarised in **Table 11** for the Avon SPA. Within the table, where we have outlined as 'No Overflows' this identifies that this planning objective is not relevant to the catchment, whereas 'Not Applicable' indicates that the catchment did not trigger more detailed BRAVA assessment.

Table 11: Results of the storm overflow risk assessment for the Avon SPA catchments.

Ref	Catchment Name	Population	2020	2025	2030	2035	2050
10451	FINHAM (COVENTRY)	477,671	0	0	0	0	0
10354	WARWICK (LONGBRIDGE)	108,466	1	1	1	1	1
10429	RUGBY NEWBOLD	105,347	0	0	0	0	0
10168	REDDITCH (SPERNAL)	80,096	0	0	0	0	0
10348	STRATFORD (MILCOTE)	38,497	0	0	0	0	0
10313	TEWKESBURY	29,374	0	0	0	1	2
10035	EVESHAM	28,826	1	1	1	1	1
10308	BROCKHAMPTON	17,017	2	2	2	2	2
10027	BLACKMINSTER	16,231	0	0	0	0	0
10434	ITCHEN BANK (SOUTHAM)	14,883	1	1	1	1	1
10163	PRIEST BRIDGE	13,871	0	0	0	0	0
10040	PERSHORE	11,489	0	0	0	0	0
11232	LUTTERWORTH	11,320	2	2	2	2	2
10152	ALVECHURCH	10,023	0	0	0	0	0

## FDWMP: Detailed Level 2 Strategic Planning Area Assessment (Avon)

Ref	Catchment Name	Population	2020	2025	2030	2035	2050
10454	BEDWORTH (MARSTON LANE)	9,932	0	0	0	0	0
10151	ALCESTER	8,750	1	1	1	1	0
10154	BIDFORD-ON-AVON	7,994	0	0	0	0	0
10332	SHIPSTON FELL MILL	7,154	0	0	0	0	0
10355	WELLESBOURNE	6,875	2	2	2	2	2
10433	WOLSTON	5,887	0	0	0	0	0
10305	WINCHCOMBE	5,040	1	1	1	1	0
10051	HONEYBOURNE	4,867	0	0	0	0	0
10287	BROADWAY	3,822	0	0	0	0	1
10028	BREDON	3,641	0	0	0	0	0
10378	WOOTTON WAWEN	3,580	0	0	0	0	0
10030	CROPTHORNE HEATH	2,742	0	0	0	0	0
10148	ASTWOOD BANK	2,708	0	0	0	0	0
10402	DUNCHURCH	2,548	0	0	0	0	0
10404	KILSBY	2,429	0	0	0	0	0
10161	HARVINGTON WORKS	2,408	0	0	0	0	0
10403	FRANKTON	2,324	0	0	0	0	0
10430	KINETON-STW	2,314	0	0	0	0	0
10330	CHIPPING CAMPDEN	2,284	0	0	0	0	0
10329	BLOCKLEY	1,913	0	0	0	0	0
10353	ROWINGTON	1,831	2	2	2	2	2
10401	BRAUNSTON	1,783	0	0	0	0	0
11229	KIMCOTE	1,739	2	2	2	2	2
10166	INKBERRROW	1,716	0	0	0	0	0
10044	TWYNING	1,513	2	2	2	2	2
11248	SOUTH KILWORTH	1,389	2	2	2	2	2
10350	CHERINGTON	1,321	0	0	0	0	0
10282	ALDERTON	1,211	2	2	2	2	2
10306	WOOLSTONE	1,123	2	2	2	2	2
10033	ECKINGTON	1,122	0	0	0	0	0
10278	STOKE ORCHARD	1,122	0	0	0	0	0
10398	WELFORD	1,116	0	0	0	0	0
10466	MONKS KIRBY	1,100	2	2	2	2	2
10405	BRINKLOW	1,058	0	0	0	0	0
10326	SNITTERFIELD	1,049	0	0	0	0	0
10345	TYSOE	1,006	0	0	0	0	0
10321	ETTINGTON	986	0	0	0	0	0
10097	CROWLE (WORCESTER)	985	2	2	2	2	2
10461	CORLEY	966	NA	NA	NA	NA	NA
10176	RIDGEWAY	957	NA	NA	NA	NA	NA
10393	NAPTON WRW	937	2	2	2	2	2
10285	BECKFORD	885	0	0	0	0	0
10351	LEEK WOOTTON	864	NA	NA	NA	NA	NA
10349	CLAVERDON	837	0	0	0	0	0
10022	SEDGEBERROW	828	0	0	0	0	0
10327	SIBFORD FERRIS	825	NA	NA	NA	NA	NA
10425	FENNY COMPTON	797	0	0	0	0	1
10341	LONG COMPTON	776	0	0	0	0	0
10389	LIGHTHORNE HEATH	758	NA	NA	NA	NA	NA
10432	YELVERTOFT	756	0	0	0	0	0
10406	WESTON-UNDER-WETHERLEY	746	0	0	0	0	0
10055	LOWER MOOR	711	0	0	0	0	0
10340	ILMINGTON	711	2	2	2	2	2
10265	ASHTON-U-HILL	708	0	0	0	0	0
10392	NASEBY WRW	690	0	0	0	0	0
10026	BISHAMPTON	686	2	2	2	2	2
10318	BEARLEY	672	0	0	0	0	0
10427	BUBBENHALL	591	0	0	0	0	0
11239	SWINFORD	589	2	2	2	2	2
10319	BUTLERS MARSTON	582	NA	NA	NA	NA	NA
10343	NETHERCOTE	560	NA	NA	NA	NA	NA
10324	PRESTON-ON-STOUR	559	NA	NA	NA	NA	NA
10342	NORTON LINDSEY	554	0	0	0	0	0
10396	STAVERTON	488	NA	NA	NA	NA	NA
10039	PEOPLETON	471	0	0	0	0	0
10390	MORETON MORRELL	457	0	0	0	0	0
10385	HARBOROUGH MAGNA	443	0	0	0	0	0
10323	OXHILL	435	NA	NA	NA	NA	NA
10156	CHURCH LENCH	423	0	0	0	0	0
10384	GAYDON	394	NA	NA	NA	NA	NA
10032	DEFFORD VILLAGE	386	0	0	0	0	0
10397	WILLOUGHBY	385	NA	NA	NA	NA	NA
10165	FLYFORD FLAVELL	373	0	0	0	0	0

## FDWMP: Detailed Level 2 Strategic Planning Area Assessment (Avon)

Ref	Catchment Name	Population	2020	2025	2030	2035	2050
10387	LILBOURNE	373	0	0	0	0	0
10394	NORTHEND	372	2	2	2	2	2
10344	STRETTON-ON-FOSSE	371	NA	NA	NA	NA	NA
10346	ULLENHALL	366	NA	NA	NA	NA	NA
10388	LIGHTHORNE	353	2	2	2	2	2
10382	CHURCH LAWFORD	340	NA	NA	NA	NA	NA
17618	HANBURY (WORCESTERSHIRE)	326	2	2	2	2	2
10302	TODDINGTON	320	2	2	2	2	2
10280	DUMBLETON	305	NA	NA	NA	NA	NA
10328	TANWORTH-IN-ARDEN	305	0	0	0	0	0
10084	UPTON SNODSBURY	295	0	0	0	0	0
10347	WHICHFORD	292	NA	NA	NA	NA	NA
10046	LITTLE COMBERTON WKS	286	0	0	0	0	0
10325	RADWAY	260	NA	NA	NA	NA	NA
10025	ASTON SOMERVILLE	228	NA	NA	NA	NA	NA
10047	HINTON-ON-THE-GREEN	215	0	0	0	0	0
10315	STANTON (GLOUCESTERSHIRE)	212	NA	NA	NA	NA	NA
10312	LAVERTON	207	2	2	2	2	2
10052	LOWER STRENSHAM	207	0	0	0	0	0
10383	CHURCHOVER	204	0	0	0	0	0
10317	ASTON MAGNA	203	NA	NA	NA	NA	NA
14761	BIRLINGHAM	203	NA	NA	NA	NA	NA
10023	STOULTON (HAW BRIDGE)	184	NA	NA	NA	NA	NA
15134	FLECKNOE	179	NA	NA	NA	NA	NA
10386	KNIGHTCOTE	179	NA	NA	NA	NA	NA
10167	KINGTON	172	NA	NA	NA	NA	NA
10068	BROUGHTON HACKET	158	NA	NA	NA	NA	NA
10335	COMBROOK	158	NA	NA	NA	NA	NA
10424	LAWFORD HEATH	158	NA	NA	NA	NA	NA
10391	MORETON PADDOX	158	0	0	0	0	0
10395	PRIORS HARDWICK	154	NA	NA	NA	NA	NA
10380	ASHORNE	146	NA	NA	NA	NA	NA
10174	ROUS LENCH	135	NA	NA	NA	NA	NA
11235	SHAWELL	125	2	2	2	2	2
17926	SALE GREEN	123	NA	NA	NA	NA	NA
10314	WORMINGTON	110	NA	NA	NA	NA	NA
10428	BRETFORD	101	NA	NA	NA	NA	NA
10045	WADBOROUGH	101	NA	NA	NA	NA	NA
10043	THROCKMORTON	100	NA	NA	NA	NA	NA
10150	ABBOTTS MORTON	94	NA	NA	NA	NA	NA
10149	DUNNINGTON	91	NA	NA	NA	NA	NA
10400	WORMLEIGHTON	89	NA	NA	NA	NA	NA
10338	ADMINGTON	88	NA	NA	NA	NA	NA
10088	WHITTINGTON (NEAR MOTORWAY)	88	NA	NA	NA	NA	NA
18128	EARLS COMMON	87	NA	NA	NA	NA	NA
10381	BASCOTE	81	NA	NA	NA	NA	NA
10083	SNEACHILL	81	NA	NA	NA	NA	NA
10024	TILESFORD PARK	76	NA	NA	NA	NA	NA
10426	LOWER SHUCKBURGH	65	NA	NA	NA	NA	NA
10320	DORSINGTON	62	NA	NA	NA	NA	NA
10269	GREAT WASHBOURNE	62	NA	NA	NA	NA	NA
10020	NAUNTON BEAUCHAMP	61	NA	NA	NA	NA	NA
10322	OLD MILVERTON	58	NA	NA	NA	NA	NA
10056	DEFFORD LODGE HILL	44	NA	NA	NA	NA	NA
17817	WHITTINGTON EAST	42	NA	NA	NA	NA	NA
10399	WINWICK	36	NA	NA	NA	NA	NA
10423	CHURCHOVER (COTON ROAD)	35	NA	NA	NA	NA	NA
10059	PEBORTH MIDDLESEX	33	NA	NA	NA	NA	NA
10042	STOULTON (WINDMILL LANE)	32	NA	NA	NA	NA	NA
18009	TEWKESBURY (LINCOLN GREEN LANE)	21	NA	NA	NA	NA	NA
18005	LOWER STRENSHAM (BAUGHTON LN)	17	NA	NA	NA	NA	NA
14491	STRENSHAM INTAKE	17	NA	NA	NA	NA	NA
18649	TARDEBIGGE	5	NA	NA	NA	NA	NA
11237	SNOWDON LODGE	5	NA	NA	NA	NA	NA
11222	GLEBE FARM	4	NA	NA	NA	NA	NA
17811	BROCKHILL	2	NA	NA	NA	NA	NA
11223	GRANGE FARM	2	NA	NA	NA	NA	NA

## fDWMP: Detailed Level 2 Strategic Planning Area Assessment (Avon)

For our dDWMP, the costs we provided were based on spill count using the same EA 12/24 block spill counting methodology used for EDM spill reporting (the '12/24' spill count is explained in CIWEM Urban Drainage Group Good Practice Guide <sup>[1]</sup>), however this does not consider the potential to cause environmental harm.

Since the publication of our dDWMP, the Government published the Storm Overflow Discharge Reduction Plan (SODRP) in August 2022. This confirmed the requirements for a maximum of 10 overflow activations for an average year per asset, with lower thresholds where overflows are causing harm. Priority is given to high priority sites such as those with RNAGs linked to intermittent discharges, completed SOAF investigations, Sites of Special Scientific Interest (SSSI), Special Areas of Conservation (SAC), eutrophic sensitive areas and chalk streams (of which there are none in the Severn Trent region).

In November 2022, we submitted our WINEP programme for 2025-2030 to the Environment Agency. The DWMP played an important role in providing the evidence base that informed the storm overflows element of the submission and supported the growth impact element effecting WwTW. All these elements seek to ensure that we do our fair share to improve water quality in rivers in our region.

To meet the requirements set out in the SODRP for this SPA our draft WINEP and fDWMP include investment to reduce spill activations to 10 or fewer at 127 overflows by 2050, with screens being fitted to a further 66 overflows. In terms of cost the investment needs are shown in **Table 12**.

*Table 12: Investment profile to meet the requirements of the SODRP*

	2025-30 AMP8	2030-35 AMP9	2035-40 AMP10	2040-45 AMP11	2045-50 AMP12	TOTAL
Number of storm overflows improved	7	26	29	14	51	127
Number of sites with screen improvement only	0	0	22	24	22	66
Total Cost £m	£14.56m	£57.45m	£86.95m	£46.26m	£113.42m	£318.68m

Further detail on how our fDWMP aligns with the SODRP is included in 'Appendix 6 – Alignment to the Storm Overflow Discharge Reduction Plan'.

### Wastewater Treatment Works

All our Wastewater Treatment Works (WwTW) are subject to permits issued by the Environment Agency which specify the standard which must be met before treated effluent can be discharged into the environment. These standards consider the ability of the receiving waterbody to accommodate treated effluent and considers dilution and current water quality status. We are passionate about meeting our legal duty under Section 94 of the Water Industry Act in maintaining 100% permit compliance.

To optimise efficient operational performance and avoid the risk of building over-sized assets, many of our WwTW are not designed with large amounts of spare headroom to accommodate potential future speculative development. Whilst we take account of foreseeable growth set out in local development plans when we upgrade our WwTW, we try to avoid building oversized, potentially expensive assets with underutilised capacity as this is usually inefficient and costly to operate. As a result, many WwTW would struggle to accommodate future pressures from climate change, growth, and urban creep by 2050 and still maintain permit compliance without investment.

<sup>1</sup> [https://www.ciwem.org/assets/uploads/CIWEM\\_UDG\\_EDM\\_Good\\_Practice\\_Guide\\_2021\\_final.pdf](https://www.ciwem.org/assets/uploads/CIWEM_UDG_EDM_Good_Practice_Guide_2021_final.pdf)

## FDWMP: Detailed Level 2 Strategic Planning Area Assessment (Avon)

The method we have used to assess WwTW compliance can be found in the 'WwTW Capacity Technical Summary'. As part of our DWMP optioneering we have assessed our treatment against four criteria (summarised in **Table 13**) to understand future challenges to maintain permit compliance and to inform what intervention options are available. Since the publication of our dDWMP we have updated our analysis to include 2021 flow data to ensure our fDWMP assessments are based on best available information to support PR24 investment requirements.

**Table 13: Summary of the WwTW capacity assessment criteria**

WwTW Assessment Criteria	Explanation
<b>Flow Headroom</b>	Assessment of the Q80 recorded flow (see glossary) compared to current permit. We use this to understand how many new homes could be accommodated before we need to apply for a revised discharge permit.
<b>Process Treatment Headroom</b>	Assessment of how current processes are meeting quality parameters.
<b>Environmental Capacity</b>	Assessment of the limitations of current best available treatment technologies which will constrain what is technical achievable to treat. It accounts for the cost of building, operating and maintaining high-tech processes in perpetuity and considers the impact of energy and chemical hungry processes on climate change. If current treatment processes are close to what is technically achievable to treat this could constrain future interventions and our ability to meet tighter permit standards to maintain environmental standards.
<b>Site Constraints</b>	Assesses the available land footprint available on a site which may limit possibilities to expand the site in the future. This includes physical constraints such as rivers, railways, roads or existing developments.

The results of our assessments for the WwTW within the Avon SPA are shown in **Table 14**.

**Table 14: Results from the WwTW capacity assessment, these highlights where existing improvement works are planned in the short term for AMP7 (2020-2025) and indicatively in AMP8 (2025-2030)**

Ref	Catchment Name	Population	2021	2025	2030	2035	2050	Planned Investment
10451	FINHAM (COVENTRY)	485,791	2	2	2	2	2	AMP8 Planned
10354	WARWICK (LONGBRIDGE)	109,485	0	0	2	2	2	
10429	RUGBY NEWBOLD	103,165	0	0	0	0	1	
10168	REDDITCH (SPERNAL)	80,450	2	2	2	2	2	AMP7
10348	STRATFORD (MILCOTE)	38,764	1	1	1	1	1	
10035	EVESHAM	29,710	0	0	0	0	0	
10313	TEWKESBURY	24,897	1	1	1	1	1	
10308	BROCKHAMPTON	18,269	0	0	0	0	1	
10027	BLACKMINSTER	16,646	0	0	0	0	1	AMP7
10434	ITCHEN BANK (SOUTHAM)	14,750	2	2	2	2	2	AMP7/AMP8
10163	PRIEST BRIDGE	13,693	0	0	0	0	1	
10040	PERSHORE	11,655	0	0	0	0	1	
11232	LUTTERWORTH	11,607	2	2	2	2	2	AMP8 Planned
10152	ALVECHURCH	10,382	0	0	0	0	0	
10454	BEDWORTH (MARSTON LANE)	9,980	0	0	0	0	1	
10151	ALCESTER	9,484	0	0	0	0	0	
10154	BIDFORD-ON-AVON	8,393	0	2	2	2	2	
10332	SHIPSTON FELL MILL	7,092	0	0	0	0	0	
10355	WELLESBOURNE	7,076	2	2	2	2	2	AMP7/AMP8
10433	WOLSTON	5,764	0	0	0	0	0	
10305	WINCHCOMBE	5,321	0	0	0	0	0	
10051	HONEYBOURNE	4,987	0	0	0	0	0	
10287	BROADWAY	4,043	0	0	0	0	1	AMP7
10378	WOOTTON WAWEN	3,697	0	0	0	0	0	
10028	BREDON	3,639	0	0	2	2	2	
10030	CROPTHORNE HEATH	2,758	2	2	2	2	2	AMP7/AMP8
10148	ASTWOOD BANK	2,688	0	0	0	0	1	
10402	DUNCHURCH	2,534	0	0	0	0	1	
10404	KILSBY	2,462	0	0	0	0	0	
10430	KINETON-STW	2,445	0	0	0	0	0	
10161	HARVINGTON WORKS	2,386	0	0	0	0	1	
10330	CHIPPING CAMPDEN	2,330	0	0	0	0	0	
10403	FRANKTON	2,319	0	0	0	0	1	
10329	BLOCKLEY	1,902	0	0	0	0	1	
10353	ROWINGTON	1,839	0	0	0	0	1	

## fdWMP: Detailed Level 2 Strategic Planning Area Assessment (Avon)

Ref	Catchment Name	Population	2020	2025	2030	2035	2050	Planned Investment
10401	BRAUNSTON	1,805	0	0	0	1	1	
10166	INKBERRROW	1,804	0	0	0	0	1	
11229	KIMCOTE	1,677	0	0	2	2	2	
10044	TWYNING	1,641	0	0	2	2	2	
10350	CHERINGTON	1,347	2	2	2	2	2	Monitor
10282	ALDERTON	1,231	2	2	2	2	2	AMP8 Planned
10278	STOKE ORCHARD	1,186	0	0	0	0	0	
10306	WOOLSTONE	1,171	0	0	0	0	0	
10398	WELFORD	1,168	0	0	0	0	0	
10033	ECKINGTON	1,104	0	0	0	0	0	
10405	BRINKLOW	1,102	0	0	1	1	1	
10466	MONKS KIRBY	1,102	0	0	0	0	0	
11248	SOUTH KILWORTH	1,078	2	2	2	2	2	AMP8 Planned
10326	SNITTERFIELD	1,070	0	0	0	0	0	
10461	CORLEY	1,009	NA	NA	NA	NA	NA	
10097	CROWLE (WORCESTER)	988	2	2	2	2	2	AMP8 Planned
10176	RIDGEWAY	986	NA	NA	NA	NA	NA	
10345	TYSOE	976	0	0	0	0	0	AMP7
10321	ETTINGTON	956	0	0	0	0	0	
10393	NAPTON WRW	932	0	2	2	2	2	
10349	CLAVERDON	914	0	0	0	0	0	
10285	BECKFORD	888	2	2	2	2	2	AMP8 Planned
10022	SEDGEBERROW	855	0	0	0	0	0	
10351	LEEK WOOTTON	847	0	0	0	0	0	
10327	SIBFORD FERRIS	820	NA	NA	NA	NA	NA	
10341	LONG COMPTON	797	2	2	2	2	2	AMP8 Planned
10389	LIGHTHORNE HEATH	789	0	0	0	0	0	
10432	YELVERTOFT	770	0	0	0	0	0	
10026	BISHAMPTON	759	0	0	0	0	1	
10425	FENNY COMPTON	732	0	0	0	0	0	
10406	WESTON-UNDER-WETHERLEY	732	0	0	0	0	0	
10055	LOWER MOOR	730	0	0	1	1	1	
10265	ASHTON-U-HILL	720	2	2	2	2	2	AMP8 Planned
10340	ILMINGTON	712	0	0	0	0	0	
10392	NASEBY WRW	653	0	0	0	0	0	
10318	BEARLEY	645	0	0	0	0	0	
10396	STAVERTON	606	NA	NA	NA	NA	NA	
10319	BUTLERS MARSTON	595	NA	NA	NA	NA	NA	
10343	NETHERCOTE	565	0	0	0	0	0	
11239	SWINFORD	563	2	2	2	2	2	AMP8 Planned
10342	NORTON LINDSEY	557	0	0	0	1	1	
10324	PRESTON-ON-STOUR	549	NA	NA	NA	NA	NA	
10427	BUBBENHALL	530	0	0	0	0	0	
10039	PEOPLETON	526	0	0	1	1	1	
10390	MORETON MORRELL	470	0	0	0	0	0	
10385	HARBOROUGH MAGNA	442	0	0	0	0	0	
10156	CHURCH LENCH	438	0	0	2	2	2	
10323	OXHILL	437	NA	NA	NA	NA	NA	
10032	DEFFORD VILLAGE	423	0	0	0	0	0	
10384	GAYDON	396	NA	NA	NA	NA	NA	
10387	LILBOURNE	377	0	0	0	0	0	
10344	STRETTON-ON-FOSSE	377	NA	NA	NA	NA	NA	
10397	WILLOUGHBY	376	NA	NA	NA	NA	NA	
10165	FLYFORD FLAVELL	375	2	2	2	2	2	AMP8 Planned
10394	NORTHEND	370	0	0	0	0	0	
10346	ULLENHALL	366	NA	NA	NA	NA	NA	
10388	LIGHTHORNE	352	0	0	0	0	0	
10302	TODDINGTON	343	2	2	2	2	2	AMP8 Planned
17618	HANBURY (WORCESTERSHIRE)	340	0	0	1	1	1	
10382	CHURCH LAWFORD	331	0	0	2	2	2	
10328	TANWORTH-IN-ARDEN	307	0	0	0	0	0	
10280	DUMBLETON	300	NA	NA	NA	NA	NA	
10347	WHICHFORD	299	NA	NA	NA	NA	NA	
10084	UPTON SNODSBURY	295	0	0	0	0	1	
10046	LITTLE COMBERTON WKS	288	0	0	0	0	1	
10325	RADWAY	259	NA	NA	NA	NA	NA	
10025	ASTON SOMERVILLE	229	NA	NA	NA	NA	NA	
10047	HINTON-ON-THE-GREEN	217	0	0	0	0	0	
10315	STANTON (GLOUCESTERSHIRE)	212	NA	NA	NA	NA	NA	
10052	LOWER STRENSHAM	207	0	0	1	1	1	
14761	BIRLINGHAM	206	NA	NA	NA	NA	NA	
10317	ASTON MAGNA	205	NA	NA	NA	NA	NA	
10383	CHURCHOVER	204	0	0	0	0	0	

## fdWMP: Detailed Level 2 Strategic Planning Area Assessment (Avon)

Ref	Catchment Name	Population	2020	2025	2030	2035	2050	Planned Investment
10312	LAVERTON	203	0	0	0	0	0	
10023	STOULTON (HAW BRIDGE)	184	NA	NA	NA	NA	NA	
15134	FLECKNOE	178	NA	NA	NA	NA	NA	
10386	KNIGHTCOTE	178	NA	NA	NA	NA	NA	
10167	KINGTON	171	0	0	0	0	1	
10068	BROUGHTON HACKET	157	NA	NA	NA	NA	NA	
10335	COMBROOK	157	NA	NA	NA	NA	NA	
10424	LAWFORD HEATH	157	NA	NA	NA	NA	NA	
10391	MORETON PADDOX	157	0	0	0	0	0	
10395	PRIORS HARDWICK	153	NA	NA	NA	NA	NA	
10380	ASHORNE	145	NA	NA	NA	NA	NA	
10174	ROUS LENCH	135	NA	NA	NA	NA	NA	
11235	SHAWELL	125	0	0	0	0	0	
17926	SALE GREEN	123	NA	NA	NA	NA	NA	
10314	WORMINGTON	110	NA	NA	NA	NA	NA	
10428	BRETFORD	101	NA	NA	NA	NA	NA	
10045	WADBOROUGH	101	0	0	0	0	0	
10043	THROCKMORTON	100	0	0	0	0	0	
10150	ABBOTTS MORTON	94	NA	NA	NA	NA	NA	
10149	DUNNINGTON	91	NA	NA	NA	NA	NA	
10400	WORMLEIGHTON	89	NA	NA	NA	NA	NA	
10338	ADMINGTON	88	NA	NA	NA	NA	NA	
10088	WHITTINGTON (NEAR MOTORWAY)	88	NA	NA	NA	NA	NA	
18128	EARLS COMMON	87	NA	NA	NA	NA	NA	
10381	BASCOTE	81	NA	NA	NA	NA	NA	
10083	SNEACHILL	81	NA	NA	NA	NA	NA	
10024	TILESFORD PARK	76	NA	NA	NA	NA	NA	
19848	WELLESBOURNE - WALTON ROAD	69	NA	NA	NA	NA	NA	New WwTW
10426	LOWER SHUCKBURGH	65	NA	NA	NA	NA	NA	
10320	DORSINGTON	62	NA	NA	NA	NA	NA	
10269	GREAT WASHBOURNE	62	NA	NA	NA	NA	NA	
10020	NAUNTON BEAUCHAMP	61	NA	NA	NA	NA	NA	
10322	OLD MILVERTON	57	NA	NA	NA	NA	NA	
10056	DEFFORD LODGE HILL	44	NA	NA	NA	NA	NA	
17817	WHITTINGTON EAST	42	NA	NA	NA	NA	NA	
10399	WINWICK	36	NA	NA	NA	NA	NA	
10423	CHURCHOVER (COTON ROAD)	35	NA	NA	NA	NA	NA	
10059	PEBORTH MIDDLESEX	33	NA	NA	NA	NA	NA	
10042	STOULTON (WINDMILL LANE)	32	NA	NA	NA	NA	NA	
18009	TEWKESBURY (LINCOLN GREEN LANE)	21	NA	NA	NA	NA	NA	
18005	LOWER STRENSHAM (BAUGHTON LANE)	17	NA	NA	NA	NA	NA	
14491	STRENSHAM INTAKE	17	NA	NA	NA	NA	NA	
11237	SNOWDON LODGE	5	NA	NA	NA	NA	NA	
18649	TARDEBIGGE	5	NA	NA	NA	NA	NA	
11222	GLEBE FARM	4	NA	NA	NA	NA	NA	
17811	BROCKHILL	2	NA	NA	NA	NA	NA	
11223	GRANGE FARM	2	NA	NA	NA	NA	NA	

When it comes to intervention options, future interventions at WwTW are more complex due to a varied mix of different investment drivers that need to be considered. Investment needs at WwTW are driven by multiple drivers, namely capital maintenance (to deal with life expired assets), growth (to increase process capacity to accommodate new development) and effluent quality improvements where the Environment Agency request changes to permit requirements as set out in the Water Industry National Environmental Programme (WINEP). Due to the complex nature of WwTW processes, it is rare that investment deals with a single driver.

### Summary of Programme Outputs

From the DWMP assessments this indicates the following needs for catchments within the Avon SPA:

#### First 5 years

- We will continue with our river pledge and ensure that we do not cause any RNAGS within our drainage area (overflow and treatment works)
- We will fully comply with the new Storm Overflow Discharge Reduction Plan targets for 2030 by implementing a pragmatic balance of blue / green and grey engineering solutions. We will focus on

## fdWMP: Detailed Level 2 Strategic Planning Area Assessment (Avon)

the Defra priority areas (Sites of Special Scientific Interest (SSSI) and Special Areas of Conservation (SAC)) for removal of local ecological impact from our assets (overflows and treatment works)

- For all overflows invested in we will ensure that they have appropriate screening controls in place to reduce aesthetic impact on the watercourses
- We will start to implement interventions with regard to flood reduction in line with our best value plan by implementing a pragmatic balance of blue / green and grey engineering solutions.
- We will continue with investigations in river quality including standard ecological, aesthetic and water quality chemical monitoring following the industry standards and incorporating new guidance from DEFRA, OFWAT and the EA. Where any issues are found, pragmatic operational remediation will be implemented with more complex interventions planned and actioned in the next 5 year programme period.

### Over the next 5 to 10 years

- We will fully comply with the new Storm Overflow Discharge Reduction Plan targets for 2035 by implementing a pragmatic balance of blue / green and grey engineering solutions. We will focus on the Defra priority areas (Eutrophic sensitive areas) for removal of local ecological impact from our assets (overflows and treatment works)
- For all overflows invested in we will ensure that they have appropriate screening controls in place to reduce aesthetic impact on the watercourses
- Ensure we will continue to reduce flood risk in our catchments in line with our best value plan regarding flooding by implementing a pragmatic balance of blue / green and grey engineering solutions.
- We will continue with investigations in river quality including standard ecological, aesthetic and water quality chemical monitoring following the industry standards and incorporating new guidance from DEFRA, OFWAT and the EA. Where any issues are found, pragmatic operational remediation will be implemented with more complex interventions planned and actioned in the next 5 year programme period.

### Over the next 10 to 25 years

- We will fully comply with the new Storm Overflow Discharge Reduction Plan targets up to 2050 by implementing a pragmatic balance of blue / green and grey engineering solutions. We will do this by ensuring we have no overflow spilling more than 10 times per average year by reducing spill frequency by implementing a pragmatic balance of blue / green and grey engineering solutions.
- For all overflows in our system, we will ensure that they have appropriate screening controls in place to reduce aesthetic impact on the watercourses
- Ensure we will continue to reduce flood risk in our catchments by focusing on the medium and long term priority catchments within our DWMP best value plan in regard to flooding by implementing a pragmatic balance of blue / green and grey engineering solutions.
- We will continue with investigations in river quality including standard ecological, aesthetic and water quality chemical monitoring following the industry standards and incorporating new guidance from DEFRA, OFWAT and the EA. Where any issues are found, pragmatic operational remediation will be implemented with more complex interventions planned and actioned in the next 5 year programme period.

## What's next?

Our DWMP has helped us better understand the performance of those catchments within this SPA which have proceeded through DWMP. This allows us to understand the expected long term investment needs across our catchments.

## **fDWMP: Detailed Level 2 Strategic Planning Area Assessment (Avon)**

The publication of our fDWMP is supporting our PR24 business plan, covering the period from 2025-30. The intention being that DWMP provided evidence to ensure short term investment needs align with the longer-term needs of our catchments out to 2050 and beyond. Our PR24 plan is being prepared using the same tools which were used in our DWMP to create the best value plan to ensure consistency of approach. The DWMP presents the best value plan, demonstrating what investment is needed between now and 2050 supported by customer willingness to pay, but only covering elements of what PR24 considers. Our PR24 business plan is being submitted to Ofwat in October 2023. This plan will set out all our investment plans for 2025 to 2030 (known as AMP8), including water supply and asset maintenance needs, and so not just what is set out in our DWMP. Our business plan will consider priorities to meet the long-term challenges we face, whilst taking account of affordability of customers' bills. Ofwat will review our plan and will publish their conclusions in Autumn 2024.