Severn Trent Water Ltd

Draft Drought Plan 2013
Strategic Environmental Assessment

Environmental Report

May 2013

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Client: **Severn Trent Water Limited**

Title: **Draft Drought Plan 2013: Strategic Environmental Assessment Environmental Report**

Project No: **CC557**

Date of Issue: **09 May 2013**

Status: **Final**

Version No: **1.0**

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NON TECHNICAL SUMMARY

Introduction

Under the Water Industry Act 1991, Severn Trent Water is required to prepare and update its statutory Drought Plan every 3½ years. This Strategic Environmental Assessment (SEA) has been undertaken on Severn Trent Water's Draft Drought Plan 2013. This updated Draft Drought Plan provides a comprehensive statement of the actions Severn Trent Water will consider implementing during drought conditions to safeguard essential water supplies to its customers whilst minimising environmental impact. It is consistent with Severn Trent Water's Water Resources Management Plan (WRMP), the objective of which is to set the strategic plan for maintaining reliable and sustainable water supplies over a 25 year period.

Drought Plans encompass a number of drought options that will only be implemented if and when required. Each drought is different in terms of its severity, season, location and duration; each combination of these factors may require a different combination of measures to be implemented. To ensure flexibility of response, the Draft Drought Plan includes a range of temporary demand management (demand-side) and temporary supply enhancement (supply-side) options to help maintain essential water supplies to customers across the Severn Trent Water supply area.

SEA of plans and programmes is a statutory requirement under Directive 2001/42/EC, as transposed into UK law by the Environmental Assessment of Plans and Programmes Regulations 2004. The purpose of SEA is to help ensure a high level and strategic protection of the environment by incorporating environmental considerations at an early stage in the development and preparation of plans and policy. In the context of drought planning, SEA assists in the identification of the potential environmental impacts of Severn Trent Water's drought management options, assesses how any adverse impacts might be mitigated and contributes to decisions on the formulation of the Drought Plan.

The SEA provides information on the relative environmental performance of alternatives, and is intended to make the planning and decision-making process more transparent. The SEA can, therefore, be used to support the timing and implementation of drought management options within the Drought Plan.

SEA screening confirmed that Severn Trent Water's Draft Drought Plan required an SEA due to uncertainties surrounding the potential impact of some options on sites designated under the Habitats Directive. A SEA Scoping Report was issued in November 2012, and provided an opportunity for the statutory consultees to provide views on the proposed scope and level of detail of this SEA Environmental Report.

Issues raised by consultees at the scoping stage have subsequently been considered in preparing this report.

The findings of the SEA are presented within this Environmental Report which is now subject to public consultation.

Assessment Methodology

The assessment has been 'objectives-led'. SEA objectives have been derived from environmental objectives established in law, policy or other plans and programmes, and from a review of the baseline information. The SEA objectives have been categorised under the following topic areas: biodiversity, flora and fauna; population and human health; material assets and resource use; water; soil, geology and land use; air and climate; archaeology and cultural heritage; landscape and visual amenity. The overall findings of the SEA describe the extent to which objectives for each topic are met by each of the drought options.

The outputs of the assessment are a completed appraisal framework table for different drought options, and a colour coded summary matrix (ranging from major beneficial impacts to major adverse impacts). This provides a comparative assessment of the residual environmental effects of implementing each drought option (i.e. those impacts remaining after the implementation of mitigation measures).

A cumulative, or in-combination, assessment has also been undertaken which has involved examining the potential impacts of each of the drought options in combination with each other as well as in combination with the implementation of other relevant plans and programmes.

Findings of the Assessments

Demand side options

Demand-side options serve to reduce pressure on water resources by reducing customer demand for water, and therefore reducing the need for supply-side options to abstract more water from the environment. Mixed or adverse effects of demand-side options have been identified with respect to population and human health and the value of water to the local economy where restrictions of water use are involved. These adverse effects increase in significance as more water uses become prohibited.

The SEA assessment of the demand-side option supports the proposed ordering and sequencing of implementation of these options relative to the supply-side options set out in the Draft Drought Plan.

Supply-side options

Severn Trent Water's plan contains numerous supply side options. The Draft Drought Plan shows which actions Severn Trent will consider in different drought trigger zones. These trigger zones range from normal operations in zones A and B to more extreme measures such as drought permits and orders in zones E and F. The majority of the supply-side drought management options involve optimising or re-deploying existing sources. For example, several of the options associated with drought trigger zone D involve transferring water to different locations within the Severn Trent Water supply network. All of the options in drought trigger zones A to D involve operation of water sources within existing abstraction licence conditions.

There are seven supply-side options that would require a drought permit or drought order to authorise additional abstraction. No construction works are required to make use of these options.

Operationally, the supply-side options are assessed as having a wide range of potential impacts, from major adverse effects on biodiversity, flora and fauna for some options to major beneficial effects for water resource reliability and resilience. The SEA indicates those supply-side options with a lower level of impact that should be considered for implementation in the first stages of a developing drought. Options with a greater impact could be implemented later if the drought intensifies. However, selection of the appropriate option for implementation during a drought will also depend on a range of other factors: the amount of water made available; how effectively this water can be utilised; the spatial distribution of drought impact; prevailing environmental conditions and the time of year.

The SEA highlights that most of the supply-side options associated with drought trigger zones A to D in the Draft Drought Plan would have no greater than minor adverse effects on the SEA topics. For example, the use of licensed groundwater sources (Norton C and D Boreholes, Beechtree Lane Borehole, Abbey Green Borehole) would have only negligible or minor environmental impacts.

The following seven locations could be affected by a Severn Trent Water drought permit or drought order application:

- Tittesworth Reservoir and the River Churnet
- River Leam at Leamington
- River Avon at Stareton
- Derwent Valley Reservoirs
- River Derwent at Ambergate

- River Severn at Trimpley
- River Wye at Wyelands

The first three of these options were assessed as having the least environmental effects. The Derwent Valley and River Derwent drought permit options were assessed as having slightly greater, but minor, adverse effects.

By contrast, the remaining two supply-side options have the potential for greater adverse environmental effects. The proposed drought permit and drought order options for the River Severn at Trimpley would authorise additional abstraction during times of low flow and river regulation, leading to lower river flows downstream with moderate adverse effects for water quality and aquatic ecology. The lower river flows resulting from the drought permit or order also have the potential to impact on the internationally important environment of the Severn Estuary which is designated as a Special Area of Conservation, Special Protection Area and a Ramsar site. However, work carried out to date indicates that even with the drought permit or drought order in place, flows in the River Severn downstream of Trimpley during drought conditions may still be higher than would naturally have been expected due to the benefit of the River Severn flow regulation scheme. Consequently, significant adverse effects on the Severn Estuary are considered unlikely, but given the international environmental importance of the estuary, Severn Trent Water is currently carrying out more detailed investigations to confirm this provisional assessment. The findings of these investigations will be presented in an updated Environmental Assessment Report which is due to be completed by autumn 2013.

The drought order option for the River Wye at Wyelands in the Draft Drought Plan is likely to have major adverse effects on the environment. The River Wye is designated for its important aquatic habitats and species (including salmon, lamprey and shad fish species) as a Special Area of Conservation (SAC). The Environment Agency Wales recently completed its review of Severn Trent Water's normal abstraction licence conditions for the River Wye at Wyelands and concluded that they may lead to adverse effects on the designated aquatic features of the River Wye SAC, particularly at times of low river flow. Consequently, a drought order to authorise greater abstraction at times of very low river flows during a drought is likely to exacerbate these impacts, with adverse implications for the designated aquatic habitats and species.

The environmental implications of the River Wye drought order option have been recognised by Severn Trent Water and the company is working in partnership with Natural Resources Wales, Environment Agency, Natural England, Dŵr Cymru Welsh Water and the Wye and Usk Foundation to further investigate the environmental impacts of public water supply abstractions from the River Wye. The investigations

commenced in 2012 and will be continuing throughout 2013. Severn Trent Water will build on the findings of these investigations to examine the impacts of the River Wye drought order on the SAC. These investigations will be reported in an Environmental Assessment Report by December 2014.

In parallel, Severn Trent Water has prepared its Draft Water Resources Management Plan 2013 and is in the process of preparing its long-term Business Plan. These plans will explore the longer term options to balance supply and demand across the Severn Trent region, including the area currently supplied from the River Wye.

Decisions on supply-side options to maintain essential water supplies in drought conditions also need to take account of the cumulative assessment of impacts. Greater environmental effects may arise when some of these options are operated in combination with other supply-side options or with programmes or plans of other organisations, particularly other water companies and the Environment Agency.

Cumulative Impact Assessment: Demand-Side Options

No adverse cumulative impacts are expected from implementation of one or more demand-side options. The demand-side options are complementary with potential beneficial impacts if implemented together. Cumulative beneficial effects with other water company and Environment Agency drought plans may occur if drought conditions were to arise at the same time and water efficiency campaigns are co-ordinated to maximise the water saving benefits. Demand management measures proposed in the Severn Trent Draft Water Resources Management Plan 2013 would also be complementary with the Draft Drought Plan. No other cumulative impacts with other programmes or plans were identified.

Cumulative Impact Assessment: Supply-Side Options

Cumulative impacts were assessed as no greater than minor adverse for most combination of options. For those options within the River Trent basin (Tittesworth Reservoir and the River Churnet, Derwent Valley Reservoirs and the River Derwent at Ambergate), the potential cumulative impacts of simultaneous operation on the Humber Estuary were assessed given its designation as a Special Area of Conservation, Special Protection Area and a Ramsar site. The assessment concluded that, given the scale of the additional abstraction and the distance upstream from the estuary, there would be negligible cumulative impact on this internationally important site.

For those options within the River Severn basin (groundwater options, River Leam at Leamington, River Avon at Stareton, River Severn at Trimpley), potential cumulative impacts of simultaneous operation on the Severn Estuary designated sites were assessed. The assessment concluded that it was unlikely that impacts on the estuary

would be different to the impact of the River Severn at Trimpley option operating in isolation given the negligible impact of the groundwater, River Leam and River Avon options on river flows to the estuary. However, further investigations are underway as part of the preparation of the Environmental Assessment Report for the River Severn at Trimpley.

Cumulative operation of the River Severn at Trimpley and River Wye at Wyelands was assessed as potentially having likely significant effects on the Severn Estuary European Marine Site. This will be further assessed as part of the environmental investigations into both of these options.

Given the location of Severn Trent Water's supply area and its water resources, cumulative impact assessment with other water company and Environment Agency drought plans is particularly important. Cumulative impacts were assessed in relation to the drought plans of United Utilities Water, Yorkshire Water, South Staffordshire Water, Dŵr Cymru Welsh Water, Bristol Water, Wessex Water, Anglian Water, Dee Valley Water, Environment Agency Wales and the Environment Agency Midlands and North West regions. In the majority of cases, cumulative impacts with these plans were assessed as no greater than minor adverse. However, moderate to major adverse cumulative impacts were identified with drought permit and order options contained within the existing drought plans of South Staffordshire Water and the Environment Agency Midlands region due to potential adverse effects on the Severn Estuary designated sites, and with the existing Dŵr Cymru Welsh Water drought plan due to adverse effects on the River Wye SAC.

Cumulative impacts were also assessed with Severn Trent Water's draft Water Resource Management Plan 2013. There is the potential for some minor adverse cumulative effects in relation to the River Derwent drought options if proposed water resource schemes in the River Derwent catchment are implemented in the longer term (beyond 2025). Other proposed schemes for the longer term would either be mutually exclusive to drought options or have the potential to reduce the need for drought options.

No other cumulative impacts with other programmes or plans were identified.

Mitigation and Monitoring

Consideration of mitigation measures has been an integral part of the SEA process. The SEA appraisals have been based on residual impacts that are likely to remain after the implementation of reasonable mitigation.

During implementation of one or more drought options, appropriate monitoring will be undertaken to track any potential environmental effects which will, in turn, trigger deployment of suitable and practicable mitigation measures. Prior to

implementation, Severn Trent Water will review the specific requirements for environmental monitoring in consultation with the Environment Agency, Natural England and Natural Resources Wales.

Next Steps

This SEA Environmental Report is being issued for public consultation. Once comments have been received through this consultation, the SEA will be used to support Severn Trent Water in producing its Final Drought Plan that will be published in due course following approval from the Secretary of State and Welsh Government.

When the drought plan is implemented during an actual drought event, Severn Trent Water will use the SEA to support decisions on option implementation. The company will also monitor the effects of any options implemented on the environment, helping to ensure that the potential impacts identified in the SEA are considered in practice.

Consultation

The statutory consultation bodies, as well as the public, are invited to express their views on this Environmental Report and can use it as a reference point in expressing their views on the concurrent consultation on Severn Trent Water's Draft Drought Plan 2013.

The consultation period for this SEA Environmental Report will run from 10th May 2013 to 5th July 2013. Comments should be emailed to:

phil.metcalfe@cascadeconsulting.co.uk

Alternatively, comments can be made in writing to the following address:

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1 INTRODUCTION TO SEA AND DROUGHT PLAN

1.1 BACKGROUND AND PURPOSE OF REPORT

Severn Trent Water is undertaking a Strategic Environmental Assessment (SEA) of its draft statutory Drought Plan (DP) 2013[1]. SEA is a statutory requirement to support the development of plans or programmes which could have significant environmental implications, and helps to identify the nature and scale of potential impacts and how any negative impacts might be mitigated. The application of SEA to the draft DP forms an integral part of Severn Trent Water's drought planning process, alongside other supporting assessments such as Environment Assessment Reports and Habitats Regulations Assessment (HRA). More information about SEA, the rationale for applying it to the draft DP and its integration with other assessment documents is provided in Section 1.2 below.

This Environmental Report (ER) is the second output of the SEA. In November 2012, an SEA Scoping Report was issued for consultation[2] which set out the environmental baseline and the framework that would be used for the assessment. Comments and issues raised by the statutory consultees on the Scoping Report have been considered in preparing this Environmental Report (see Section 1.9.2 Consultation).

This ER presents the baseline information that sets the context for the assessment (Section 2) and provides details of the methods employed in undertaking the assessment (Section 3). The potential impacts of the various drought management options set out in the DP are outlined in Section 4, with the impacts of combinations of these options set out in Section 5. Information regarding mitigation and monitoring is provided in Section 6. A summary is provided in Section 7.

Section 1.9.3 provides details of how consultees can make comments on this Environmental Report.

1.2 APPLICATION OF SEA TO DROUGHT PLANNING

1.2.1 Overview of Strategic Environmental Assessment

SEA became a statutory requirement following the adoption of Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment. This was transposed into national legislation on 20 July 2004 as Statutory Instrument 2004 No.1633 – The Environmental Assessment of Plans and

1 Severn Trent Water (2012) *Draft Drought Plan*. January 2012.
2 Severn Trent Water (2012) *Severn Trent Draft Statutory Drought Plan, Strategic Environmental Assessment Scoping Report*. Prepared by Cascade Consulting for Severn Trent Water Services Limited. November 2012.

Programmes Regulations 2004 (the "SEA Regulations").

The objectives of SEA are set out in Article 1 of the SEA Directive as follows:

> '*to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans with a view to promoting sustainable development'.*

The SEA Directive requires the preparation of an Environmental Report in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives (taking into account the objectives and geographical scope of the plan or programme), are identified, described and evaluated.

It should be noted, however, that as stated in the Office of the Deputy Prime Minister (ODPM) SEA Guidelines[3] *"It is not the purpose of the SEA to decide the alternative to be chosen for the plan or programme. This is the role of the decision-makers who have to make choices on the plan or programme to be adopted. The SEA simply provides information on the relative environmental performance of alternatives, and can make the decision-making process more transparent."* The SEA can, therefore, be used to support decisions of the timing and implementation of actions within the plan, although this needs to be set in the context of applying SEA to drought planning, as described in Section 1.2.2 below.

SEA is usually focused mainly on environmental impacts. However, it is current best practice within the water industry to also examine the broader social effects of water resources planning and drought management. As such, the full range of environmental and social effects which are likely to arise from implementation of Severn Trent Water's DP are considered. The range of issues to be considered is set out in the SEA Regulations, and includes biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage, and landscape.

1.2.2 Requirement for SEA and HRA of Severn Trent Water's Drought Plan

The approach to SEA screening to assess the requirement for a SEA under the SEA Regulations 2004 is set out in the Office of the Deputy Prime Minister (ODPM) SEA Guidelines 2005. The flow diagram presented in Figure 2 of the ODPM Guidelines has been applied to Severn Trent Water's DP **(Figure 1.1)**.

The route through the flow diagram has been highlighted in red on **Figure 1.1**, and is

3 Office of the Deputy Prime Minister (2005) *A Practical Guide to the Strategic Environmental Assessment Directive*.

described below:

1. Is the Plan subject to preparation and/or adoption by a national, regional or local authority OR prepared by an authority for adoption through a legislative procedure by Parliament or Government?

   - **Yes, prepared by an authority (Severn Trent Water) for adoption through a legislative procedure by Parliament or Government.**

2. Is the Plan required by legislative, regulatory or administrative provisions?

   - **Yes, required by drought plan legislative provisions.**

3. Is the Plan prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, town and country planning or land use, AND does it set a framework for future development consent of projects in Annexes I and II to the EIA Directive?

   - **No to latter criterion.**

4. Will the Plan, in view of its likely effect on sites, require an assessment under Article 6 or 7 of the Habitats Directive[4]?

   - **A preliminary review of the draft Drought Plan has indicated potential implications on the River Wye SAC and Severn Estuary European Marine Site which may require Appropriate Assessment under Article 6 of the Habitats Directive**

5. Does the Plan determine the use of small areas at a local level, OR is it a minor modification of a Plan subject to Article 3.2?

   - **Yes to latter criterion.**

8. Is it likely to have a significant effect on the environment?

   - **Yes (see response to Step 4).**

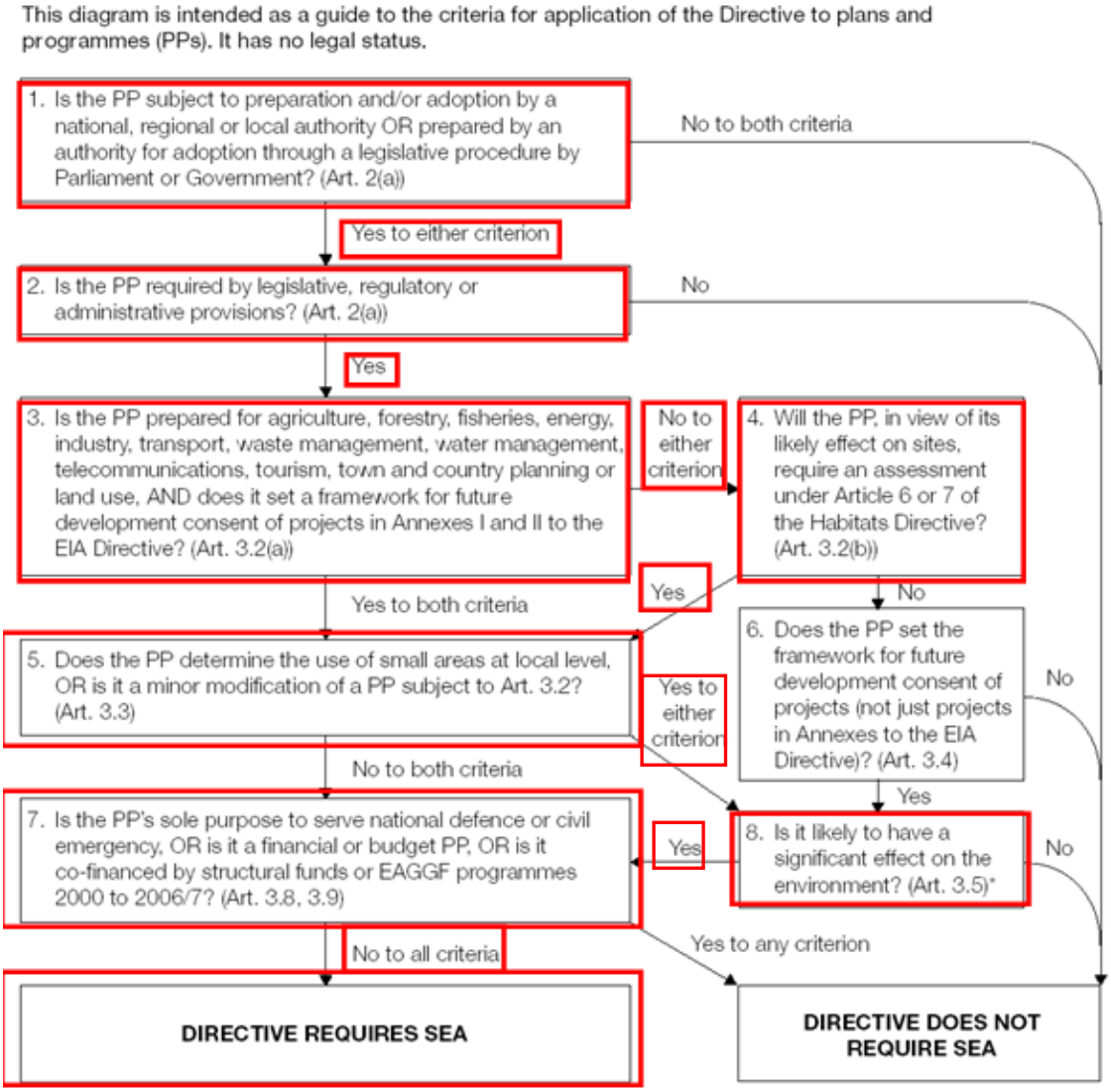
9. Is the Plan's sole purpose to serve national defence or civil emergency, OR is it a financial or budget Plan, OR is it co-financed by structural funds or EAGGF programmes 2000 to 2006/7?

   - **No to all criteria.**

RESULT: DP REQUIRES SEA

4 Superseded by the Conservation of Habitats and Species Regulations (2010), Section 61 to 67.

Figure 1.1 SEA screening route of Severn Trent Water's draft Drought Plan 2012 through flow diagram from ODPM (2005) Guidelines (as highlighted in red)



A Habitats Regulations Assessment (HRA) screening of Severn Trent Water's DP has already been carried out and is reported separately[5]. The HRA screening findings have informed the assessments reported in this Environmental Report.

[5] Severn Trent Water (2013) *Drought Plan: Habitats Regulation Assessment Screening*. Prepared by Cascade Consulting for Severn Trent Water Limited.

1.3 SEVERN TRENT WATER SUPPLY SYSTEM AND DROUGHT PLANNING

1.3.1 Introduction

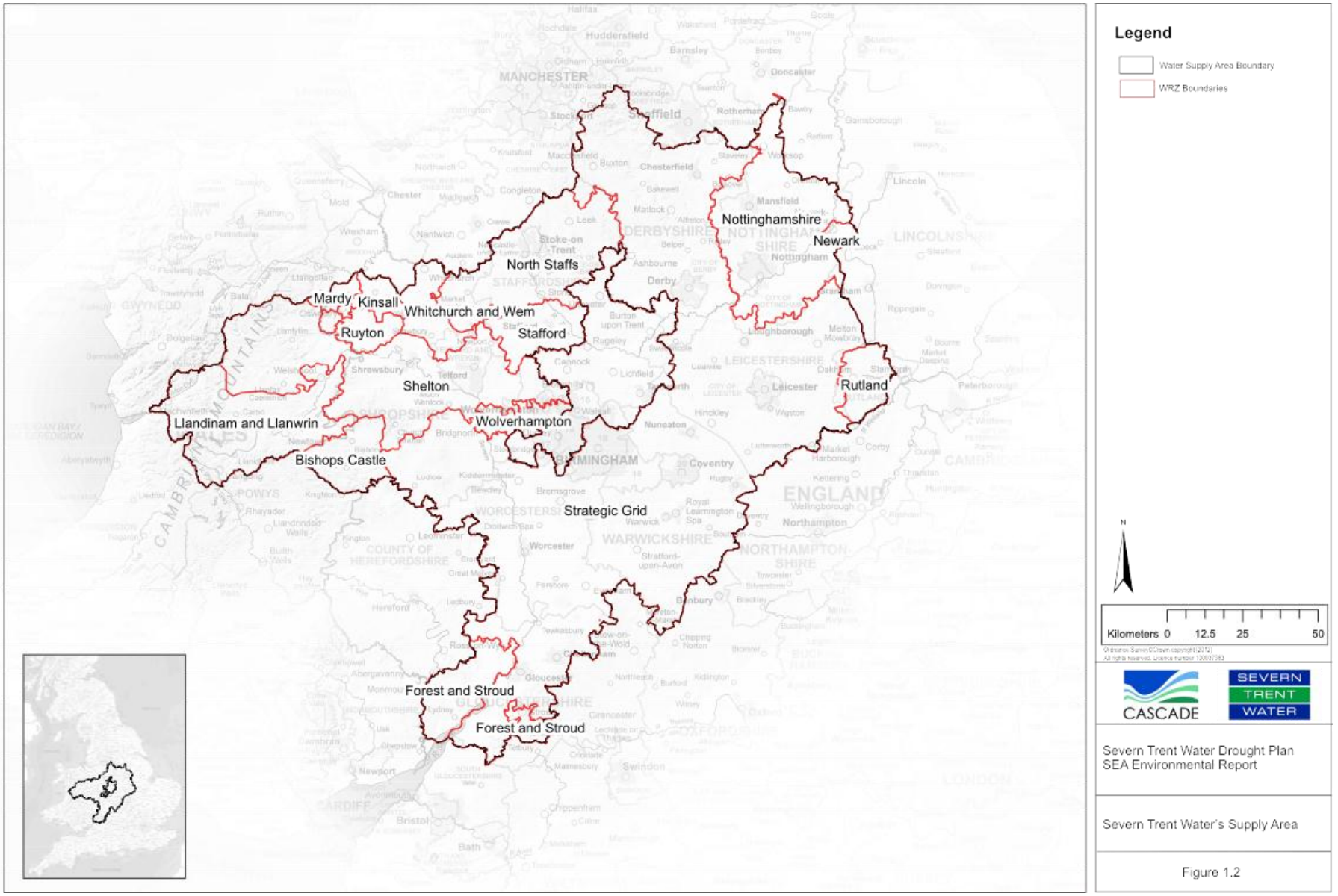
In the event of a severe drought, Severn Trent Water will need to carry out a range of management measures to ensure the provision of adequate supplies of wholesome water to its customers without the need for emergency drought orders to interrupt essential water supplies. Statutory demand management options available to water companies during drought have been extended through provisions in the Flood and Water Management Act 2010. Section 36 of this Act has amended the Water Industry Act 1991 provisions relating to hosepipe bans and allows companies to temporarily restrict a wider range of customer non-essential water uses under a Temporary Use Ban without requiring a drought order. As a consequence, the Drought Direction 1991 has also been revoked and replaced by the Drought Direction 2011 which sets out those non-essential water uses for which a drought order would be required in order to impose restrictions during a drought.

1.3.2 Severn Trent Water: Water Resources and Supply System

Severn Trent Water is one of the largest water and wastewater companies in England and Wales, providing high quality water and wastewater services to over 3.7 million households and businesses over an area of 21,000km^2 in the Midlands and mid-Wales, stretching from the Bristol Channel to the Humber. Severn Trent Water provides water to 7.7 million people, supplying 1,800 million litres (or 1,800 megalitres) of water per day (see **Figure 1.2**). Groundwater sources, river sources and impounding reservoirs each provide approximately a third of the total volume of water put into supply.

Severn Trent Water also provides sewerage services to over 8.2 million people, treating over 2.7 billion litres of wastewater every day. The area within which Severn Trent Water provides sewerage services is larger than its water supply area, because it includes the Black Country region where water is supplied by South Staffordshire Water Plc.

For water resources planning purposes, Severn Trent Water's water supply area is divided into 15 independent Water Resource Zones (WRZs) reflecting the different characteristics of the supply areas and associated risks to meeting demand within the supply area. The 15 WRZs are shown in **Figure 1.2**. The following sections summarise the characteristics of each WRZ.


Legend
Water Supply Area Boundary
WRZ Boundaries
Nottinghamshire
Newark
North Staffs
Mardy
Kinsall
Whitchurch and Wem
Ruyton
Stafford
Shelton
Rutland
Llandinam and Llanwrin
Wolverhampton
Bishops Castle
Strategic Grid
Forest and Stroud
Forest and Stroud
N
Kilometers 0 12.5 25 50
CASCADE
SEVERN TRENT WATER
Severn Trent Water Drought Plan
SEA Environmental Report
Severn Trent Water's Supply Area
Figure 1.2

Strategic Grid

By far the largest WRZ, the Strategic Grid extends from the Peak District in the north, encompassing most of Derbyshire and Leicestershire. The WRZ then extends south-west through Warwickshire to Gloucester, and then north-west covering most of Worcestershire and some of Shropshire. It serves a population of 5 million (65% of the total population supplied by Severn Trent Water).

Nottinghamshire

The Nottinghamshire WRZ is supported by inter-linked groundwater sources and can also receive transfers from the Strategic Grid. The zone is largely supplied from a sandstone aquifer, which is a large groundwater unit that responds slowly to abstraction and drought pressures. The WRZ serves just over 1 million people (13% of the total).

Newark

The Newark WRZ is supplied from local groundwater boreholes and water imports from the Nottinghamshire WRZ. The WRZ serves a population of 45,000 (0.6% of the total).

North Staffordshire

This WRZ extends from Tittesworth reservoir in the Peak District south-west towards Market Drayton, with strong inter-connections across the zone providing supply flexibility. Water is routinely transferred from Tittesworth WTW to support the groundwater supplied areas to the south-west of the zone. Similarly, when Tittesworth output is reduced, demand in the North Staffordshire area can be met by increased output from the groundwater sources. This allows the conjunctive use of groundwater and surface water resources. The WRZ serves a population of 520,000 (6.8% of the total).

Stafford

There are four borehole groups which supply the distribution reservoirs in the zone, allowing an even distribution of water throughout the zone. It serves a population of 91,000 (1.2% of the total).

Whitchurch and Wem

This WRZ lies on the English side of the England-Wales border and extends from Whitchurch southwards to Wem. The WRZ is supplied from local boreholes. The WRZ serves a population of 31,000 (0.4% of the total).

Kinsall

This WRZ lies to the west of the Whitchurch and Wem WRZ. The WRZ is supplied from local boreholes. The WRZ serves a population of 12,000 (0.2% of the total).

Mardy

This WRZ runs along the Welsh border encompassing Oswestry. The zone is supplied from a local borehole. It serves a population of 8,200 (0.1% of the total).

Ruyton

The zone is supplied from a local borehole and a limited connection from the Shelton WRZ. The zone serves a population of 12,300 (0.2%).

Shelton

This WRZ spans the England-Wales border extending from Gwynedd towards Wolverhampton. The zone will be connected by a strategic link main by the end of 2015 which will allow water resources to be more effectively utilised throughout the zone from Shropshire to west Staffordshire. The strategic link will connect supplies from the River Severn with groundwater sources in the Telford area.

Wolverhampton

The zone is supplied with water from South Staffordshire Water's water treatment works on the River Severn, with support from a number of local groundwater sources. The WRZ serves a population of 232,000 (3% of the total).

Llandinam and Llanwrin

This WRZ is supplied from local boreholes which are operated conjunctively. The WRZ serves a population of 42,000 (0.5% of the total).

Bishops Castle

The zone is supplied from local boreholes. The WRZ serves a population of 8,000 (0.1% of the total).

Rutland

This zone on the eastern edge of the supply area receives all of its water from bulk supply transfers from Anglian Water. The WRZ serves a population of 32,000 (0.4% of the total).

Forest and Stroud

This zone is supplied with water from the River Wye, which can be distributed throughout the zone, and local groundwater and spring sources. The WRZ serves a population of 130,000 (1.7% of the total).

1.4 SEVERN TRENT WATER'S DRAFT DROUGHT PLAN 2013

1.4.1 Overview

Severn Trent Water's draft DP 2013 is based on its extensive drought planning experience gained during the droughts of 1995-96, 2003 and 2010-2012, and formalises management processes that have been successfully used in practice. The draft DP updates the existing plan in accordance with the Environment Agency's water company Drought Plan Guideline, published in June 2011. The Plan is consistent with the company's draft Water Resources Management Plan 2013 and with other Environment Agency and Defra requirements.

1.4.2 Severn Trent Water Drought Management Options

The DP identifies trigger zones that support decision making for implementing drought management actions and options. The nature of the triggers varies for each water resource zone, and the nature of the drought management actions or options that will be considered also varies depending on the prevailing drought conditions and time of year.

Drought management actions may be applied either company wide, by water resource zone or to target a specific geographic area depending on the nature of the drought event prevailing at the time. The DP contains a range of potential drought management options available to Severn Trent Water, for example applications for drought permits or drought orders and imposing temporary use bans.

There are three overall categories of drought management options:

- Demand-side options, including water efficiency activities and temporary use bans, as well as the potential need for a drought order to prohibit certain non-essential water uses under the Drought Direction 2011
- Changes to the utilisation of existing Severn Trent Water supply sources within abstraction licence limits (supply-side options)
- Applications for drought permits or orders to modify the conditions of abstraction licences at a number of existing Severn Trent Water sources (supply-side options)

Demand-side drought management options

Demand-side options are designed to reduce the demand for water. The options available to Severn Trent Water are consistent between all resource zones (see **Table 1.1**).

Table 1.1 Demand-side drought management options (all water resource zones)

Demand-side options	Comments
Drought publicity campaigns	Media appeals for customer restraint
Increase water conservation campaign	Extra distribution of water saving devices, water audits for non-household customers and other similar activity
High profile promotion of free meter option	Enhance promotion to household customers of free water meter installations
Increased leakage detection and repair activity	Ensure that all maintenance programmes are up-to-date and undertake additional leakage control, leading to demonstrable water savings.
Introduction of Temporary Use Ban	Restrictions on the use of hosepipes for a range of uses, including the washing of vehicles and boats, watering gardens and filling of paddling pools in line with the Temporary Use Ban regulations
Introduction of a drought order to prohibit non-essential water uses (as defined in the Drought Direction 2011)	Application for a drought order to prohibit certain non-essential water uses in line with those uses defined in the Drought Direction 2011. This would only be applied for if the relevant indicators enter drought trigger zone F

Supply-side drought management options: changes to source utilisation within existing abstraction licence conditions

By far the largest group of supply-side options relate to actions that can be implemented within existing abstraction licence limits. These options are considered 'business as usual' and are not included within the draft DP SEA or HRA screening. The exceptions to this are licensed, but "stood-down" water sources which are included in the SEA as they are currently non-commissioned sources which do not operate as 'business as usual' and require re-commissioning in the event that they need to be brought back into supply as a drought option. Supply-side drought options are listed in **Table 1.2**.

Table 1.2 Supply-side drought management options

Supply-side options	Details
Intra company transfers/ re-zoning	Implications to water quality, pressure, cost and other operational issues considered by Severn Trent's drought action team
Optimising existing sources	Implications to water quality, pressure, cost and other operational issues considered by Severn Trent's drought action team
Inter-company bulk imports	Discussions with the five neighbouring companies with which bulk supply agreements are held to reduce pressure on STW water resources
Re-commissioning of unused or under-utilised licensed water sources	Licensed but stood down sources considered to be available are: Norton C and D boreholes, Beechtree Lane borehole, Abbey Green Borehole for non-drought permit use, Siskin Drive option and Rothley Brook option.

Supply-Side Drought Management Options: Drought Permit or Drought Order Options

Potential drought permit or drought order sites are identified in **Table 1.3** and in **Figure 1.3**.

Table 1.3 Drought Permit or Drought Order Options

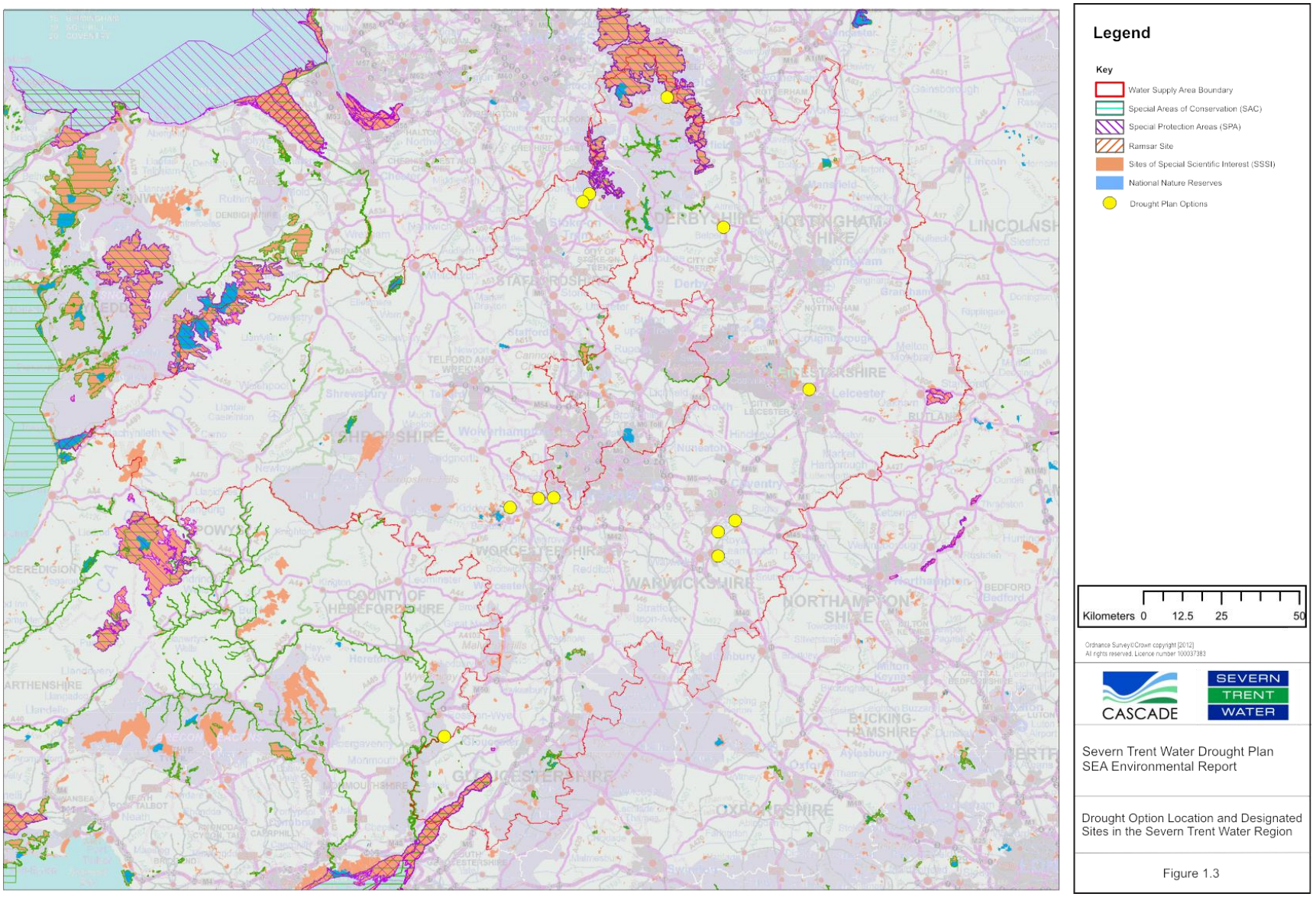
Water Source	Drought Permit/Order Measures
Derwent Valley Reservoirs (Ladybower Reservoir)	Reduction in reservoir compensation flow
River Derwent at Ambergate	Variation in prescribed flow conditions
Tittesworth Reservoir and River Churnet	Variation to reservoir compensation flow requirements
River Leam at Leamington	Variation to prescribed flows and extension to abstraction period at Eathorpe
River Avon at Stareton	Variation in prescribed flow conditions
River Severn at Trimpley	Variation to abstraction conditions
River Wye at Wyelands	Variation to abstraction conditions

Figure 1.3 indicates the general geographical setting and location of the potential drought permit/order options set out in the DP.

Summary

Drought management options included in the draft DP are accompanied by drought management action forms (Appendix F and G for demand-side and supply side options respectively) in accordance with the Environment Agency Drought Plan Guideline. Information provided in these forms has been used to inform the SEA.

It is noted that some drought management options may have different environmental effects depending on the season of implementation (for example a summer drought compared to a winter drought). This SEA assessed the overall impacts on a worst-case basis with any seasonal differences noted.


Legend
Key
Water Supply Area Boundary
Special Areas of Conservation (SAC)
Special Protection Areas (SPA)
Ramsar Site
Sites of Special Scientific Interest (SSSI)
National Nature Reserves
Drought Plan Options
Kilometers 0 12.5 25 50
Ordnance Survey©Crown copyright [2012]
All rights reserved. Licence number 100037383
CASCADE
SEVERN TRENT WATER
Severn Trent Water Drought Plan
SEA Environmental Report
Drought Option Location and Designated Sites in the Severn Trent Water Region
Figure 1.3

1.5 DROUGHT PERMIT/ORDER ENVIRONMENTAL ASSESSMENT REPORTS

Environmental Assessment Reports have been prepared for most of the drought permit/order sites as identified in **Table 1.4**, as part of Severn Trent Water's drought contingency planning.

This work was carried out in consultation with the Environment Agency and Natural England (and Countryside Council for Wales (CCW[6]) where appropriate), and involved the collation of various ecological and environmental datasets and the collection of additional information where necessary to allow the study to be undertaken.

The aim has been to produce environmental reports that have been agreed with the Environment Agency and discussed with Natural England and CCW such that in the event of a drought they are readily available for refreshing based on the prevailing drought situation at that time. The environmental studies consider all potentially affected habitats and species, including relevant European Sites, Sites of Special Scientific Interest (SSSI) and Priority Habitats and Species as identified on the English and Welsh Lists (S.41 NERC Act). The reports also include Environmental Monitoring Plan (EMP) recommendations for each drought permit/order site. These environmental studies, undertaken outside of an actual drought event, are intended to be used as the basis for the Environmental Report required to accompany a specific drought permit/order application, should the need arise.

The drought permit/order Environmental Assessment Reports will be used to inform the SEA. The Severn Trent Water Environmental Assessment Reports, with date of completion, are listed in **Table 1.4.**

[6] From 1st April 2013, Natural Resources Wales took over the responsibilities of the Countryside Council for Wales, as well as Environment Agency Wales and Forestry Commission Wales.

Table 1.4 Drought Permit/Order Sites: Environmental Assessment Reports

Drought Permit/Order Site	Date Report Completed
Derwent Valley Reservoirs	**April 2012**
River Derwent at Ambergate	**April 2012**
Tittesworth Reservoir and River Churnet	**Draft issued March 2013**
River Leam at Leamington and the River Avon at Stareton	**Draft issued March 2013**
River Severn at Trimpley (in collaboration with the Environment Agency)	**To be completed by autumn 2013**
River Wye at Wyelands (in collaboration with Dwr Cymru Welsh Water)	**To be completed by December 2014**

1.6 STAGES OF SEA PROCESS

Table 1.5 is an extract from the Government's SEA guidance, the Practical Guide[7] that sets out the main stages of the SEA process and the purpose of each task within the process.

Stage A, *Setting the context and objectives, establishing the baseline and deciding on the scope* has been undertaken. A Scoping Report was issued to consultees on 11 August 2011 (see Section 1.8.2 below) which provided an opportunity for the consultation bodies to provide views on the proposed scope and level of detail of the Environmental Report.

This Environmental Report represents work carried out in Stages B and C of the SEA process. Specific guidance on the application of the SEA process to DPs is provided in a best practice publication by UKWIR[8].

7 Office of the Deputy Prime Minister (2005). *A Practical Guide to the Strategic Environmental Assessment Directive*.
8 UKWIR (2012) *Strategic Environmental Assessment and Habitats Regulations Assessment - Guidance for Water Resources Management Plans and Drought Plans, Report Reference 12/WR/02/7,* Prepared by Cascade Consulting for UKWIR.

Table 1.5 SEA stages and tasks

Stages in the SEA Process	
SEA Stages and Tasks	**Purpose**
Stage A: Setting the context and objectives, establishing the baseline and deciding on the scope	
Task A1. Identifying other relevant plans, programmes and environmental protection objectives	To establish how the plan or programme is affected by outside factors to suggest ideas for how any constraints can be addressed, and to help identify SEA objectives
Task A2. Collecting baseline information	To provide an evidence base for environmental problems, prediction of effects, and monitoring; to help in the development of SEA objectives
Task A3. Identifying environmental problems	To help focus the SEA and streamline the subsequent stages, including baseline information analysis, setting of the SEA objectives, prediction of effects and monitoring.
Task A4. Developing SEA Objectives	To provide a means by which the environmental performance of the plan or programme and alternatives can be assessed.
Task A5. Consulting on the scope of the SEA	To ensure the SEA covers the likely significant environmental effects of the plan or programme.
Stage B: Developing and refining alternatives and assessing effects	
Task B1. Testing the plan or programme objectives against SEA objectives	To identify potential synergies or inconsistencies between the objectives of the plan or programme and the SEA objectives and help in developing alternatives.
Task B2. Developing strategic alternatives	To develop and refine strategic alternatives
Task B3. Predicting the effects of the plan or programme, including alternatives	To predict the significant environmental effects of the plan or programme and its alternatives
Task B4. Evaluating the effects of the plan or programme, including alternatives	To evaluate the predicted effects of the plan or programme and its alternatives and assist in the refinement of the plan or programme
Task B5. Mitigating adverse effects	To ensure that adverse effects are identified and potential mitigation measures are considered.
Task B6. Proposing measures to monitor the environmental effects of plan or programme implementation	To detail the means by which the environmental performance of the plan or programme can be assessed.
Stage C: Preparing the Environmental Report	
Task C1. Preparing the environmental report	To present the predicted environmental effects of the plan or programme, including alternatives, in a form suitable for public consultation and use by decision-makers.
Stage D: Consulting on the Draft Plan or programme and the Environmental Report	
Task D1. Consulting the public and consultation bodies on the draft plan or programme and the Environmental Report	To give the public and the consultation bodies an opportunity to express their opinions on the findings of the Environmental Report and to use it as a reference point in commenting on the plan or programme. To gather more information through the opinions and concerns of the public
Task D2. Assessing significant changes	To ensure that the environmental implications of any significant changes to the draft plan or programme at this stage are assessed and taken into account
Task D3. Making decisions and providing information	To provide information on how the Environmental Report and consultees opinions were taken into account in deciding the final form of the plan or programme to be adopted
Stage E: Monitoring the significant effects of the plan or programme on the environment	
Task E1. Developing aims and methods for monitoring	To track the environmental effects of the plan or programme to show whether they are as predicted; to help identify adverse effects
Task E2. Responding to adverse effects	To prepare for appropriate responses where adverse effects are identified.

1.7 STRUCTURE OF THE ENVIRONMENTAL REPORT

This SEA Environmental Report presents the findings of Stages B and C as set out in **Table 1.5** and, in line with Stage D1, provides the public and the consultation bodies with the opportunity to express their opinions on the findings of the Environmental Report and to use it as a reference point in commenting on the plan or programme.

This Section (**Section 1**) of the report describes the overall purpose and process of the SEA and background to Severn Trent Water's supply system, draft DP and drought planning process.

The remainder of the report is structured as follows:

Section 2 - Baseline and Context. This sets out the key environmental issues Severn Trent Water has considered in the SEA, drawing on information on the current state of the environment within Severn Trent Water's water supply. A review of other policies, plans and programmes which influence the DP is also included.

Section 3 – Methodology. This provides details of the methods employed in undertaking the assessment including the cumulative effects assessment methodology.

Section 4 – Assessment of Drought Options. This presents the potential impacts of the various DP options against the SEA assessment framework.

Section 5 – Cumulative Effects Assessment. This discusses the potential in-combination impacts of drought options (intra-zone and inter-zone), demand management options and other relevant plans and projects.

Section 6 – Mitigation and Monitoring. This discusses measures envisaged to prevent, reduce and offset any significant adverse effects of implementing the DP and monitoring to track the environmental effects to show whether they are as predicted, to help identify any adverse impacts and trigger deployment of mitigation measures.

Section 7 – Summary.

Following feedback and discussion with the statutory consultation bodies, the main body of the ER focuses on the key areas of concern identified through SEA scoping, in particular the assessment of options that would be required to maintain essential water supplies in the event of a third consecutive year of drought. To maintain focus on the key issues in the main body of this ER, use is made of Appendices to provide readers with the full supporting data and information that have been used to inform the SEA assessment process.

1.8 CONSULTATION

1.8.1 Consultation on the SEA Scoping Report

Statutory consultation bodies and stakeholders were invited to express their views on the SEA Scoping Report in accordance with SEA Regulation 12(5). The Scoping Report was issued on 2 July 2012 to the Environment Agency, English Heritage, Natural England, Cadw, Environment Agency Wales, Countryside Council for Wales and Welsh Government. The Scoping Report was also issued to range of stakeholders for comment. The consultation period ran from 6 November to 3 December 2012. Consultees were invited to comment on the report and the proposed scope of the SEA. A summary of the issues raised and the responses to the comments are presented in **Appendix A**.

1.8.2 Consultation on the Environmental Report

This Environmental Report has been produced taking into consideration the SEA Scoping Report responses and any subsequent comments made by consultees. The statutory consultation bodies, as well as the public, are now invited to express their views on this Environmental Report and can use it as a reference point in expressing their views on Severn Trent Water's Draft DP 2013.

The consultation period for this SEA Environmental Report will run from 10th May 2013 to 5th July 2013. Comments should be emailed to:

phil.metcalfe@cascadeconsulting.co.uk

Alternatively, comments can be made in writing to the following address:

Dr Phil Metcalfe

Cascade Consulting

Enterprise House

Manchester Science Park

Lloyd Street North

Manchester

M15 6SE

2 BASELINE AND CONTEXT

2.1 INTRODUCTION

Annex 1 of the SEA Directive (Directive 2001/42/EC) requires the following specific baseline information to be included within the Environmental Report to identify the environmental characteristics of areas likely to be significantly affected by the DP:

- *"an outline of the…relationship with other plans and programmes"*
- *"the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme*"
- *"the environmental characteristics of areas likely to be significantly affected"*
- *"any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC (the 'Birds Directive') and 92/43/EEC (the 'Habitats Directive')*
- *"the environmental protection objectives, established at international, (European) Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation".*

In accordance with the SEA Directive, a review of relevant policies, plans and programmes is presented in Section 2.2. Baseline environmental information is presented in Section 2.3. A summary of key issues has been prepared and is presented in Section 2.4. Full details are provided in the referenced Appendices.

2.2 REVIEW OF POLICIES, PLANS AND PROGRAMMES

One of the first steps in undertaking SEA is to identify other relevant policies, plans, programmes and environmental protection objectives. The review of these other plans sets out to establish how Severn Trent Water's DP might be affected by other plans, to identify other environmental protection objectives which the DP should consider. These were set out in the SEA Scoping Report and have been updated in light of feedback from the SEA Scoping consultation.

Potentially relevant plans and programmes were identified at the international, national, regional and local level. If the plan or programme was assessed as not having a significant effect on achieving the objectives of the DP, or the DP does not

have a significant effect on achieving the objectives of the other plan or programme, it was not included.

The international, national, regional and local policies, plans, programmes and strategies reviewed and the key messages, targets and how they relate to SEA topics and SEA objectives are provided in **Appendix B** and listed in **Table 2.1.** The information from this review was used to direct the presentation of baseline information on the current environmental and social characteristics of Severn Trent Water's supply area (Section 2.3), and to develop objectives for the SEA assessment process (see Section 3 and **Table 3.1**).

Table 2.1 Policy, plans and programmes reviewed

International
Bathing Water Quality Directive (76/160/EEC)
Council of Europe (2006) *European Landscape Convention*
Council of Europe: The Convention on the Protection of Archaeological Heritage (Revised) (Valetta Convention) (1992)
European Commission, *Drinking Water Directive* (1998/83/EC)
European Commission, *Animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals* (2006/88/EC)
European Commission, *Birds Directive* (2009/147/EC)
European Commission, *Environmental Liability Directive* (2004/35/EC)
European Commission, *Floods Directive* (2007/60/EC)
European Commission, *Fresh Water Fish Directive* (2006/44/EC)
European Commission, *Habitats Directive* (1992/43/EEC)
European Commission, *The Water Framework Directive (2000/60/EC)*
European Commission, *The Groundwater Directive (Protection of Groundwater Against Pollution Caused by Certain Dangerous Substances)* (80/68/EEC)
European Commission, *The 2008 Ambient Air Quality Directive* (2008/50/EC)
European Commission, *Urban Waste Water Treatment Directive* (1991/271/EEC)
European Commission, *Nitrate Directive* (91/676/EEC)
European Commission, *Promotion of the use of Energy from Renewable Sources Directive* (2009/28/EC)
Planning (Listed Buildings and Conservation Areas) Act (1990)
Ramsar Convention The Convention on Wetlands of International Importance (1971)
The Bern Convention on Conservation of European Wildlife & Natural Habitats (1979)
The Bonn Convention on Conservation of Migratory Species of Wild Animals (1983)
UNESCO World Heritage Convention, 1972
United Nations Economic Commission for Europe (1998) *Aarhus Convention - Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters*
United Nations, *Convention on Biological Diversity (CBD) (1992)*
United Nations (2002) *Commitments arising from the World Summit on Sustainable Development, Johannesburg*
National
British Waterways, *Drought Plan Maps* (2012)
Cabinet Office (2001), *National Strategy Action Plan for Neighbourhood Renewal*
Cadw, CCW and ICOMOS (UK) (International Council on Monuments and Sites) (2001) - *Register of Landscapes of Historic Importance*
Climate Change Act (2008)
Communities and Local Government (2012), *National Planning Policy Framework*
Countryside Council for Wales (CCW) (2003) *Priority Habitats of Wales*
DCMS Ancient Monuments and Archaeological Areas Act (1979)
DECC (2007) *Energy White Paper: Meeting the Energy Challenge*
Defra (2005), *Making space for water: taking forward a new government strategy for flood and coastal erosion risk management in England*
Defra (2006) *Sustainable Farming and Food Strategy: Forward Look*
Defra (2007) *The Air Quality Strategy for England, Scotland and Wales*
Defra (2007), *Conserving Biodiversity in a Changing Climate: Guidance on Building Capacity to Adapt*
Defra (2007), *England Biodiversity Strategy – towards adaptation to climate change*,
Defra (2008), *Future Water: the Government's water strategy for England*
Defra (2008), *Invasive Non-Native Species Framework Strategy for Great Britain*
Defra (2009) *Safeguarding our Soils – A Strategy for England*
Defra (2009), *Consultation on modernisation of salmon and freshwater fisheries legislation; new order to address the passage of fish*
Defra (2010), *Delivering a Healthy Natural Environment. Ecosystem Approach Action Plan* (updated)
Defra (2010), *Making Space for Nature: A Review of England's Wildlife Sites and Ecological Network*
Defra (2010), *Noise Action Plan (NAP) West Midlands Agglomeration*
Defra (2011) *The Natural Choice: securing the value of nature,* The Natural Environment White Paper

Defra *(2011), Biodiversity 2020: A strategy for England's wildlife and ecosystem services*
Defra (2011), *Water for Life*. Water White Paper, November 2011
Defra (2011), *Government Review of Waste Policy in England 2011*
Defra (2012) *The UK Climate Change Risk Assessment 2012 Evidence Report*
Defra(2005), *Securing the Future; Delivering UK Sustainable Development Strategy*
Defra, *Conservation of Habitats and Species Regulations 2010*
Defra, *England Biodiversity Strategy – towards adaptation to climate change*, (2007)
Defra, *Rural Strategy 2004* (2004)
Defra, *The First Soil Action Plan for England* (2004)
Defra, *The Strategy for Sustainable Farming and Food – facing the future* (2002)
Department for Culture, Media and Sport (2001), *The Historic Environment – A Force for the Future*
DETR*, The air quality strategy for England, Scotland, Wales and Northern Ireland. Working together for clean air (2000)*
DCMS Ancient Monuments and Archaeological Areas Act (1979)
DCLG (2009) *Circular on the Protection of World Heritage Sites*
English Heritage (2010) *Strategic Environmental Assessment, Sustainability Appraisal and the Historic Environment*
Environment Act, 1995
Environment Agency Wales (2012) Drought Plan
Environment Agency (1999), *Restoring Sustainable Abstraction Programme*
Environment Agency (2007) *Soil a precious resource: Strategy for protecting, managing and restoring soil*
Environment Agency (2009), *Creating a Better Place: Environment Agency Corporate Strategy 2010-2015*
Environment Agency (2010), *National Flood and Coastal Risk Management Strategy for England*
Environment Agency (2010), *Corporate Plan 2011 – 2015*
Environment Agency (2010), *Managing Water Abstraction*
Environment Agency Wales (2012) *Living Waters for Wales*
Environment Agency (2009) *Water Resources Strategy for Wales*
Environment Agency (2010), *Water Resources Action Plan for England and Wales*
Environment Agency (2001), *Water resources for the future – a strategy for England and Wales*
Environment Agency (2009), *Water Resources Strategy for England and Wales*
Environment Agency, *WFD River Basin Characterisation Project: Technical Assessment*
Environment Agency, *Shoreline Management Plans*
Environment Agency (undated), *WFD River Basin Characterisation Project: Technical Assessment Method – River Abstraction and Flow Regulation*
Environment Agency (undated), *Hydroecology: Integration for Modern Regulation*
Environment Agency Wales, *Salmon Action Plans*
Flood and Water Management Act, 2010
HM Government, *The Natural Choice: Securing the Value of Nature (2011).* Natural Environment White Paper, June 2011
HM Treasury Infrastructure UK (2010), *National Infrastructure Plan*
Natural Environment and Rural Communities Act, 2006
ODPM (2000), *Urban white paper: our towns and cities*
ODPM (2003), *Sustainable Communities Plan – Building for the future*
Planning (Listed Buildings and Conservation Areas) Act (1990)
Salmon and Freshwater Fisheries Act 1975
The Conservation of Habitats and Species Regulations, 2010
The Countryside and Rights of Way (CROW) Act, 2000
The Eels (England and Wales) Regulations 2009
The Environmental Damage (Prevention and Remediation) Regulations 2009 (as amended)
The Natural Environment and Rural Communities (NERC) Act (2006)
Water Resources Act, 1991 (Amendment) (England and Wales) Regulations, 2009 SI3104
The Waste (England and Wales) Regulations, 2011
The Water Act, 2003
The Water Environment (Water Framework Directive) (England and Wales) Regulations, 2003
UKCIP (2009)*, UK Climate Projections UKCP09*
UKTAG on the WFD, *e.g. Development of Environmental Standards (Water Resources) Stage 3 WFD48, Sniffer, 2006*
Welsh Assembly Government (2001), *Technical Advice Note 21: Waste*
Welsh Assembly Government (2004), *Technical Advice Note 15: Development & Flood Risk*
Welsh Assembly Government (2005), *Technical Advice Note 8: Renewable Energy*
Welsh Assembly Government (2006), *The Environment Strategy for Wales*
Welsh Assembly Government (2008), *Wales Spatial Plan*
Welsh Assembly Government (2008), *Welsh Soils Action Plan*

Welsh Assembly Government (2009), *Minerals Technical Advice Note 1*
Welsh Assembly Government (2009), *One Wales: One Planet – a new sustainable development scheme for Wales*
Welsh Assembly Government (2009), *Rural Development Plan 2007-2013 Bringing Opportunities to Wales*
Welsh Assembly Government (2009), *Technical Advice Note 5: Nature Conservation and Planning*
Welsh Assembly Government (2010), *Towards Zero Waste*
Welsh Assembly Government (2010), *Climate Change Strategy for Wales*
Welsh Assembly Government (2010), *Low Carbon Revolution – The Welsh Assembly Government Energy Policy Statement*
Welsh Assembly Government (2010), *State of the Environment Report – Wales (Updated 2011)*
Welsh Assembly Government (2011*), Flood and Coastal Erosion Risk Management Strategy for Wales*
Welsh Assembly Government (2012), *Planning Policy Wales* (Edition 5, 2012)
Welsh Assembly Government (2011*), Strategic Policy Position Statement on Water 2011*
Welsh Assembly Government (2012), *Energy Wales: A Low Carbon Transition*
Welsh Assembly Government (consultation document 2010), *Natural Environment Framework "A Living Wales: a new framework for our environment, our countryside and our seas"*
Welsh Assembly Government GLASTIR - Agri-environment scheme funded under the Rural Development Plan
Welsh Government (2012) *Sustaining a Living Wales: A Green Paper on a new approach to natural resource management in Wales*
Wildlife and Countryside Act 1981 (as amended)

Regional

Defra (2010) *Eel Management plans for the United Kingdom: Humber River Basin District*
Defra (2010) *Eel Management plans for the United Kingdom: Severn River Basin District*
Defra (2010) *Noise Action Plan (NAP) West Midlands Agglomeration*
Environment Agency (2004), *River Trent Salmon Action Plan (SAP)*
Environment Agency (2009), *River Basin Management Plan, Anglian River Basin District*
Environment Agency (2009), *River Basin Management Plan, Severn River Basin District*
Environment Agency (2009), *River Basin Management Plan, West Wales River Basin District*
Environment Agency (2009), *River Basin Management Plan, Humber River Basin District*
Environment Agency (2011), *Water Resources Strategy – A Regional Action Plan for Midlands Region*
Environment Agency, *Catchment Abstraction Management Strategy* documents for relevant catchments
Environment Agency, *Catchment Flood Management Plan* documents for relevant catchments
Environment Agency, *Salmon Action Plan* documents for relevant catchments
Environment Agency Wales, *Salmon Action Plans*
Environment Agency Wales (2009), *Habitats Directive Review of Consents River Usk SAC Appropriate*
Environment Agency Wales (2010), *Habitats Directive Review of Consents River Usk SAC Site Action Plan*
Environment Agency Wales (2009), *Habitats Directive Review of Consents River Wye SAC Appropriate Assessment*
Environment Agency Wales (2010), *Habitats Directive Review of Consents River Wye SAC Site Action Plan*
Environment Agency Wales (2009), *Habitats Directive Review of Consents Severn Estuary SAC and SPA Appropriate Assessment*
Environment Agency Wales (2010), *Habitats Directive Review of Consents Severn Estuary SAC and SPA Site Action Plan*
Forestry Commission, *Growing our future: The West Midlands Forestry Framework* (2004)
Cotswolds AONB Management Plan 2008-2013
Cannock Chase AONB (2009) Management Plan 2009 -2014
Malvern Hills AONB (2009) Management Plan 2009 -2014
Wye Valley AONB (2010) Management Plan 2009 – 2014
Shropshire Hills AONB (2009) Management Plan 2009 – 2014
Yorkshire Water (2012), *Draft Drought Plan*
South Staffordshire Water (2007), *Final Drought Plan*
Anglian Water (2012), *Draft Drought Plan*
Bristol Water (2011), *Draft Drought Plan*
United Utilities (2008), *Final Drought Plan*
Dwr Cymru Welsh Water (2009), *Final Drought Plan*

United Utilities, *Final Water Resources Management Plan 2010-2035* (2009)
Thames Water (2012) *Final Water Resources Management Plan 2010-2035*
Dwr Cymru Welsh Water (2011) *Revised Draft Water Resources Management Plan 2010-2035*
Dee Valley Water (2009) *Draft Final Water Resources Management Plan 2010-2035*
Severn Estuary Partnership, *State of the Severn Estuary*
Peak District National Park Authority (2012), *2012 – 2017 Management Plan*
Biodiversity Action Plans
Birmingham City Council (2010), *Core Strategy 2026 Consultation Draft*
Birmingham City Council (2007), *Heritage Strategy 2007 – 2012*
Gloucestershire Biodiversity Framework 2010
Harborough District (2011), *Core Strategy Adopted*
Chesterfield Borough (2012), *Draft Core Strategy February 2012*
Black Country (2012), *Core Strategy Adopted February 2012*
Leicester City Council (2010), *Leicester City Local Development Framework – Core Strategy, Adopted November 2010*
Borough of Redditch (2011), *Revised Preferred Draft Core Strategy – Development Plan Document – For the Borough of Redditch Jan – March 2011 (Draft)*
Bromsgrove District Council (2011), *Draft Core Strategy 2 – January 2011 (Draft)*
Powys County Council (2010), *Powys Unitary Development Plan 2001 – 2016*
Powys County Council (2012), *Powys Local Development Plan 2011 – 2026 Preferred Strategy (Consultation Draft)*
Powys County Council (2010), *Built Heritage Strategy: Ensuring Powys' Past is our Future*
Local Planning Authorities (Various) Water Cycle Studies that have been undertaken for housing growth points
Derwent Valley Mills World Heritage Site (2007), *Management Plan*
Ironbridge World Heritage Site (2001), *Management Plan*
West Midlands Woodland and Forestry Forum (2007), *Green Infrastructure: A Prospectus for the West Midlands Region*
Association of Severn Estuary Relevant Authorities (ASERA), *Severn Estuary Management Scheme*

2.3 REVIEW OF BASELINE CONDITIONS

An essential part of the SEA process is to identify the current baseline conditions and their likely evolution. It is only with knowledge of existing conditions that impacts of the DP can be identified, mitigated and subsequently monitored.

The SEA Directive (Directive 2001/42/EC) requires that the evolution of baseline conditions of the plan area (that would take place with or without implementation of the plan) is identified. This is useful when determining impact significance, particularly with regards to baseline conditions that may already be improving or worsening and the rate of such change.

The following section addresses the baseline environment associated with the Severn Trent Water region. Throughout this section of the report the term 'Severn Trent region' is used to describe the area in which Severn Trent Water supply activities interact with the environment and society. It is not necessarily defined by the Severn Trent Water supply boundary as some water sources are located outside of the supply boundary (for example, the bulk raw water supply from the Elan Valley reservoirs in Wales). The figures presented in this report help to demonstrate this visually. **Figure 2.1** shows the relationship between the various geographical boundaries from which information used in the baseline to characterise the study area is drawn.

This includes five NUTS 1 (nomenclature of territorial units for statistics)[9] regions; four Water Framework Directive (WFD) River Basin Districts and more than 10 Catchment Abstraction Management Strategy (CAMS) areas.

The baseline data were set out in the Scoping Report and have been updated based on feedback provided on the Scoping Report. The baseline data are detailed in **Appendix C.** The baseline information has been drawn from a variety of sources, including a number of the plans and programmes reviewed as part of the SEA process (see also **Table 3.1**). **Appendix C** also set out the likely future trends for the environmental issues being considered (where information is available). The key issues arising from the review of baseline conditions for each of the SEA topics are summarised in the following sub-sections.

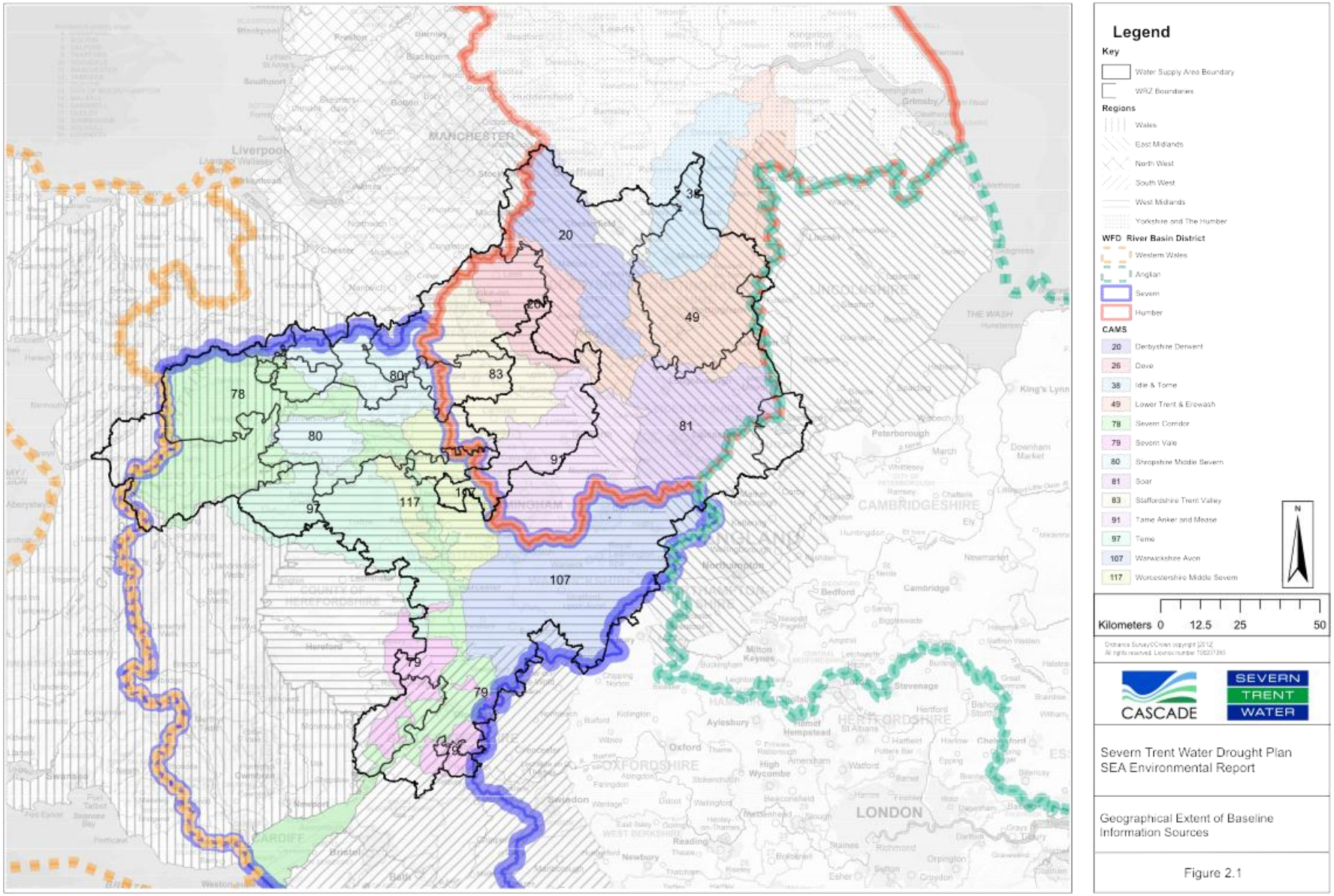
Biodiversity, Flora and Fauna

- The Severn Trent Water supply area includes a number of sites that are designated as important for biodiversity at an international, national or local level. These include 24 Special Protection Areas (SPA), 3 Special Areas of Conservation, 5 Ramsar sites and more than 600 Sites of Special Scientific Interest (SSSI) within the Severn Trent Water supply area, and additional SSSIs outside of the supply area but in hydrological continuity and therefore potentially affected by water resources supply schemes within the area.

- There are a number of designated Biodiversity Action Plan (BAP) habitats within the Severn Trent region, including eutrophic standing waters, mesotrophic lakes, blanket bog, fens and meadows.

- A large proportion of the designated sites within the Severn Trent region are water dependent, or are related to surface water and groundwater sources (for further details see **Table C.1**). Therefore changes in the water regime (surface or groundwater) through abstraction, discharges and pollution could potentially affect the integrity and condition of these designated sites.

9 In England, the region is the highest tier of sub-national division used by central Government. They are defined as first level NUTS regions ("NUTS 1 regions") within the European Union. Regional Government offices were abolished in 2011.


Legend
Key
Water Supply Area Boundary
WRZ Boundaries
Regions
Wales
East Midlands
North West
South West
West Midlands
Yorkshire and The Humber
WFD River Basin District
Western Wales
Anglian
Severn
Humber
CAMS
20 Derbyshire Derwent
26 Dove
38 Idle & Torne
49 Lower Trent & Erewash
78 Severn Corridor
79 Severn Vale
80 Shropshire Middle Severn
81 Soar
83 Staffordshire Trent Valley
91 Tame Anker and Mease
97 Tame
107 Warwickshire Avon
117 Worcestershire Middle Severn
N
Kilometers 0 12.5 25 50
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CASCADE
SEVERN TRENT WATER
Severn Trent Water Drought Plan
SEA Environmental Report
Geographical Extent of Baseline Information Sources
Figure 2.1

- The Natural Environment White Paper[10]and 'Biodiversity 2020', the Strategy for England's wildlife and ecosystem services[11] set out the Government's aims to support health ecosystems and to halt biodiversity loss.

- The key sustainability issues arising from the baseline assessment for biodiversity are presented in **Table 2.2**.

Population and Human Health

- The East Midlands region had one of the fastest growing populations between 2001 and 2011, rising by 8.0%. For the same period, the population in the West Midlands region grew by 6.1% to a total population of 5.6 million. The West Midlands Region contains one of the largest conurbations in England, as well as some of the country's most rural and sparsely populated counties.

- The DP has the potential to influence quality of life, including human health, well-being, amenity and community, through actions to maintain essential water supplies during drought conditions. There could be beneficial (e.g. actions that safeguard essential water supplies to protect public health) or adverse impacts (e.g. noise or disruption associated with temporary infrastructure, such as temporary pumps, to transfer water to areas of need).

- The DP has the potential to affect areas with recreational value through temporary changes to abstraction or prescribed flow requirements from existing Severn Trent water sources. There are a variety of opportunities for recreation and tourism within the Severn Trent Water supply area.

- The population in the Severn Trent region is expected to grow at a rate between 9% and 17%, with an increasing proportion of people at or above state pension age. Household projections show potential increases of between 19% and 34% across the Severn Trent region, with an increasing proportion of one person households and average household size decreasing.

- The National Ecosystem Assessment and the Marmot Review, *Fair Society, Healthy Lives*[12], demonstrate the positive impact that nature has on mental and physical health and as a result the Government intends to establish a

10 Defra (2011) *The Natural Choice: securing the value of nature*. The Natural Environment White Paper, June 2011
11 Defra (2011) *Biodiversity 2020*: A Strategy for England's Wildlife and Ecosystem Services
12 Marmot, M. (2010) *Fair Society Healthy Lives: The Marmot Review: Strategic Review of Health Inequalities in England post-2010*, UCL Institute of Health Equality.

Green Infrastructure[13] Partnership with civil society to support the development of green infrastructure in England.

- The key sustainability issues arising from the baseline assessment for population and human health are presented in **Table 2.2**.

Material Assets and Resource Use

- In 2011/12, Severn Trent Water put a total of 1,844million litres per day (Ml/d) into supply. Severn Trent Water currently transfers on average 69Ml/d to other water companies (mainly Yorkshire Water) and imports approximately 377Ml/d from other water companies (South Staffordshire Water, Anglian Water and Dwr Cymru Welsh Water via the Elan Valley Reservoir system). The quantity of potable water delivered to customers for public supply in 2011/12 was 1,390Ml/d which was slightly less than for the previous reporting year, and continues the general trend downwards.

- Use of water per person is relatively low in the Severn Trent Water supply area compared to other parts of the country, with an average use per person of 127 litres/day compared to a national average in England and Wales of 151 litres/day.

- Drought options which require the provision of new (temporary) infrastructure may result in the use of raw materials and the production of waste. The operation of DP options may result in additional chemical use and production of waste through water treatment processes, particularly if alternative raw water supplies require more intense levels of treatment than the usual sources (e.g. river water will require more intense treatment than a groundwater source).

- One of the Waste Framework Directive targets is for at least 70% of construction and demolition waste to go to recovery by 2020.

- The Government's National Infrastructure Plan[14] (2011) includes visions to manage natural capital sustainably; treat water and waste in ways that sustain the environment and enable the economy to prosper; ensure a supply of water that meets the needs of households, businesses and the environment now and in the future and deals with waste in accordance with the waste hierarchy moving towards a zero-waste economy. Leakage reported by Severn Trent

13 Green infrastructure is a term used to refer to the living network of green spaces, water and other environmental features in both urban and rural areas.
14 HM Treasury (2010) *Infrastructure UK (2010) National Infrastructure Plan*

Water for 2011/12 was 464Ml/d, representing a 33Ml/d reduction from the year before[15]. The target of 483Ml/d was outperformed by 10Ml/d.

- The key sustainability issues arising from the baseline assessment for material assets and resource use are presented in **Table 2.2**.

Water

- The Severn Trent Water supply area falls within four River Basin Districts (RBD). The majority of the supply area lies within the Severn RBD and the Humber RBD. Two small areas on the western and eastern boundary lie within the Western Wales RBD and the Anglian RBD, respectively.

- The part of the Severn Trent Water supply area that falls within the Severn RBD includes the River Severn and its major tributaries of the Teme and Warwickshire Avon, as well as the River Wye from which Severn Trent Water also abstracts water for supply. The part of the Severn Trent Water supply area that falls within the Humber RBD includes the River Trent, Derbyshire Derwent, River Soar, River Tame, River Anker and River Mease. River-derived water sources provide 35% of the total volume of water Severn Trent Water put into supply.

- There are 64 reservoirs and large lakes within the Severn Trent region, including reservoirs such as Carsington Water, Draycote Water, Llyn Clywedog, Craig Goch reservoir (Elan Valley Reservoir system), Tittesworth Reservoir, Rutland Water and Ladybower Reservoir. Impounding reservoirs provide 30% of the total volume of water Severn Trent Water put into supply.

- Groundwater sources provide 35% of the total volume of water put into supply. The majority of groundwater is sourced from the Sherwood Sandstone aquifers, together with a number of other minor aquifers (e.g. Millstone Grit and Coal Measures).

- Since 2007 water quality is classified according to a variety of measures as required by the WFD. The Environment Agency is over half way through an investigation programme aimed at reducing the uncertainty in the classification of waterbodies, identifying the reasons for failures and determining what needs to be undertaken to get to Good Status. The main reasons for failure, and the contribution of each, are presented in **Table C.6** below, which identifies 5% of waterbodies failing in the Severn Trent Water

15 Severn Trent Water (2012) *Ofwat Annual Return 2012*

region as a result of insufficient flow/abstraction.

- The Environment Agency's Flooding in England report[16] and the Flooding in Wales report[17] highlight the baseline with regard to flood risk in the Severn Trent Water region.

- The Environment Agency Water Strategy Regional Action Plan for the Midlands Region[18] used future scenarios to look at future pressures on water resources. Under the worst case scenario, a further 1,025 Ml/d may potentially be necessary in the Severn (England) and Humber (south) River Basins by 2050 to meet the additional needs of the public, industry and agriculture.

- Findings of the UK Climate Change Risk Assessment (CCRA) 2012 Evidence Report[19] assessment include major supply-demand deficits for five river basin regions including the Humber and Severn and lower summer river flows across the UK due to warming and drying conditions.

- The key sustainability issues arising from the baseline assessment for water are presented in **Table 2.2**.

Soil, Geology and Land Use

- The majority of agricultural land in the English area of the Severn Trent Water supply area is classified as Grade 3.

- Severn Trent Water has worked with farmers to implement catchment management solutions to water quality issues in the Midlands Region. Thirteen draft catchment investigations (six groundwater and seven surface water) have been completed and have already delivered raw water protection improvements. Severn Trent Water's landholdings and land management within these areas can have influence over some catchments.

- Severn Trent Water's water supply area is geologically diverse and includes a number of major aquifers including aquifers in the West Midlands and Nottinghamshire (e.g. Nottinghamshire Sherwood Sandstone) and smaller limestone aquifers in the Derbyshire and Cotswolds areas (Oolitic limestone of the Cotswolds.

16 Environment Agency (2009) *Flooding in England: A National Assessment of Flood Risk*
17 Environment Agency (2009) *Flooding in Wales: A National Assessment of Flood Risk*
18 Environment Agency (2009) *Water Resources Strategy – A Regional Action Plan for Midlands Region*
19 Defra (2012) *The UK Climate Change Risk Assessment 2012 Evidence Report*, Defra.

- Soil quality and structure is affected by changes in land use, groundwater levels and farming practices. Soil quality can influence run-off rates and therefore flooding and water quality. Severn Trent Water has been undertaking catchment management investigation work and pilot studies show where catchment solutions could offer viable alternatives to future treatment investment.

- The key sustainability issues arising from the baseline assessment for soil, geology and land use are presented in **Table 2.2**.

Air and Climate

- The DP options may involve construction of temporary assets such as pipelines and pumping stations as well as increased pumping and treatment of water at certain existing sites to help maintain essential water supplies. Some demand management options may involve additional vehicle movements. Therefore there is the potential for negative effects on air quality through emissions associated with temporary construction activity (on site and transportation of materials) or through the operation of some of the drought management options.

- There are 68 AQMAs in the Severn Trent Water supply area.

- The 2009 UK Climate Projections (UKCP09) estimate that summers in the East Midlands, West Midlands and Wales will be hotter and drier and the winters warmer and wetter.

- Future climate change will influence processes within the hydrological cycle such as runoff and evapotranspiration.

- The UK Climate Change Risk Assessment (CCRA) 2012 Evidence Report[20] indicate an urgent need for early adaptation action (i.e. within the next 5 years) in managing water resources, particularly in areas with increasing water scarcity

- The key sustainability issues arising from the baseline assessment for air and climate are presented in **Table 2.2**.

Archaeology and Cultural Heritage

- The Severn Trent Region includes two internationally recognised World

20 Defra (2012) *The UK Climate Change Risk Assessment 2012 Evidence Report*, Defra.

Heritage Sites[21]: The Derwent Valley Mills and the Ironbridge Gorge as well as 2,699 Scheduled Monuments, 51,150 Listed Buildings, 242 Registered Parks and Gardens and 9 Registered Battlefields.

- The Register of Landscapes of Historic Importance in Wales recognises the role human activity has played in shaping the Welsh landscape. It lists 9 landscapes of special historic interest within the Severn Trent region.

- The key sustainability issues arising from the baseline assessment for archaeology and cultural heritage are presented in **Table 2.2**.

Landscape and Visual Amenity

- There are five AONBs within, or partially within, the Severn Trent Water supply area: Cannock Chase AONB, Cotswolds AONB; Malvern Hills AONB; Shropshire Hills AONB, Wye Valley AONB. The Peak District National Park covers a small area of the Severn Trent Water supply area in the Stafford and East Shropshire WRZ whilst the Shelton WRZ and Llandinam and Llanwrin WRZ boarder Snowdonia National Park.

- Natural England have defined National Character Areas (NCAs), dividing England into 159 distinct natural areas, 23 of which are partially or fully situated within the SEA study area. Each is defined by a unique combination of landscape, biodiversity, geodiversity and cultural and economic activity. In Wales 48 Welsh regional landscape character areas with recognisable landscape character areas have been defined, 5 of which are partially or fully situated within the SEA study area.

- The DP has the potential to influence the landscape and visual amenity through the potential effects of temporary construction activity and operation of drought management options.

- The key sustainability issues arising from the baseline assessment for landscape and visual amenity are presented in **Table 2.2**.

2.4 SUMMARY OF KEY SUSTAINABILITY ISSUES

A summary of the key sustainability issues identified by the policies, plans and programmes review and the baseline data review is presented in **Table 2.2**. These key issues have been used to support the development of the SEA objectives in

21 World Heritage Sites are places of international importance for the conservation of mankind's cultural and natural heritage. The World Heritage List was set up by the World Heritage Convention, established by UNESCO in 1972. www.english-heritage.org.uk

Section 3 (as discussed in the SEA Scoping Report).

Table 2.2 Summary of the key sustainability issues identified for the SEA

Topics	The key sustainability issues arising from the baseline assessment
Biodiversity, flora and fauna	• The need to protect or enhance the region's biodiversity, particularly protected sites designated for nature conservation. • The need to avoid activities likely to cause irreversible damage to natural heritage. • The need to take opportunities to improve connectivity between fragmented habitats and take a catchment-scale or landscape-scale approach to biodiversity management. • The need to engage more people in biodiversity issues so that they personally value biodiversity and know what they can do to help.
Population and human health	• The need to ensure continued improvements in levels of health across the region, particularly in urban areas and deprived areas • The need to ensure essential water supplies are safeguarded to all communities to protect public health and economic activity. • The need to ensure a balance between different aspects of the built and natural environment that will help to provide opportunities local residents and tourists, including opportunities for access to recreational resources and the natural and historic environment • The need to promote the health benefits of drinking water, encourage efficient use of water and ensure people understand the value of water.
Material assets and resource use	• The need to minimise the consumption of resources, including water and energy. • The need to reduce the total amount of waste produced in the region, from all sources, and to reduce the proportion of this waste sent to landfill.
oWater	• The need to maintain and further improve the region's river, lake, reservoir and estuarine waters in terms of their ecology and uses. • The need to maintain and improve the quantity and quality of surface water and groundwater resources in the region. • The need to sustain and improve the resilience, flexibility and sustainability of water resources in the region. • The need to ensure sustainable abstraction, balancing the needs of consumers for a reliable supply of water with the protection of the environment. • The need to reduce and manage flood risk. • The need to ensure resilience of infrastructure against flood risk • The need to ensure that people understand the value of water..
Soil, geology and land use	• The need to protect geological features of importance and maintain and enhance soil function and health. • The need to make use of previously developed land (brownfield land) and to reduce the prevalence of derelict land in the region. • The need to manage the land more holistically at the catchment level, benefitting landowners, other stakeholders, the environment and sustainability of natural resources. • The need to protect, maintain and enhance peat land and organic soils within the region.

Topics	The key sustainability issues arising from the baseline assessment
Air and climate	• The need to reduce air pollutant and greenhouse gas emissions arising from industrial processes and transport and limit air emissions to comply with air quality standards. • The need to mitigate against climate change through the reduction in greenhouse gas emissions in order to contribute to risk reduction over the long term. • The need to adapt to the impacts of climate change for example through management of flood risk, sustainable water resource management, specific aspects of natural ecosystems (e.g. connectivity) as well as accommodating potential opportunities of climate change.
Archaeology and cultural heritage	• The need to protect and enhance heritage assets, particularly those which are dependent upon or sensitive to the water environment.
Landscape and visual amenity	• The need to protect and improve the natural beauty of the region's AONBs, Peak District National Park and other designated landscapes, and to conserve and enhance the distinctive character of the landscape (rural and urban) outside of designated landscapes.
Inter-relationships	• The need to consider the inter-relationships between topics.

3 METHODOLOGY

3.1 INTRODUCTION

This section describes the methodology that has been used to undertake the SEA of the drought options in Severn Trent Water's DP.

What the SEA Regulations require:

According to Regulation 12:

(2) The report shall identify, describe and evaluate the likely significant effects on the environment of –
(a) implementing the plan or programme; and
(b) reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme

and according to Schedule 2, the Environmental Report should include:

6. The likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects and secondary, cumulative and synergistic effects..

8. An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information.

3.2 ASSESSMENT METHODOLOGY AND SEA FRAMEWORK

As set out in the SEA Scoping Report, the strategic environmental assessment of the drought options has been 'objectives-led', the overall findings of which describe the extent to which the objectives have been met. Establishing assessment objectives is a recognised way of considering the environmental effects of a plan and comparing the effects of alternatives.

Section 5.A.12 of the Practical Guide explains that while SEA objectives are not specifically required by the SEA Directive, they are a '*recognised way of considering the environmental effects of a plan or programme and comparing the effects of alternatives*'. The objectives-led approach is recommended in the revised UKWIR

Guidance on SEA of WRMPs and Drought Plans[22] and is supported by the Environment Agency.

The Practical Guide provides a Quality Assurance checklist to help ensure that the requirements of the SEA Directive are met throughout the entire process. Compliance against this checklist is set out in **Appendix D**.

SEA objectives are often derived from environmental objectives established in law, policy or other plans and programmes, or from a review of baseline information and environmental problems (based on the SEA topics listed in Section 2.3 and 2.4).

An assessment framework of objectives has been developed based on:

- The current and future state of the environment in Severn Trent Water's supply area (see Section 2.3 and **Appendix C**).
- The key environmental issues identified (see Section 2.3 and 2.4 and summarised in **Table 2.2**).
- The key policy messages and environmental protection objectives identified in the review of policies, and other plans and programmes (see Section 2.3 and 2.4). It is important that the assessment takes these objectives into account as it can highlight any area where the DP will help or hinder the achievement of the objectives of other plans.

The SEA objectives are set out in **Table 3.1**. As well as the overall SEA objectives, a number of key questions have been developed for each SEA topic which have been used to inform whether the objectives have been met or not. These key questions prompt the assessment and ensure that it considers all the relevant aspects. A draft list of SEA objectives was developed around these environmental themes and issues, and was included in the Scoping Report. The list and wording of the objectives was subsequently refined following receipt of consultation comments on the Scoping Report.

The SEA objectives are intended to reflect changes that contribute to sustainability. Assessing each drought option against the objectives shows where drought options might have a negative (or beneficial) impact, and where options could be developed to reduce potential impacts.

The assessment of each option utilised the following available information:

22 UKWIR (2012) *Strategic Environmental Assessment and Habitats Regulations Assessment - Guidance for Water Resources Management Plans and Drought Plans, Report Reference 12/WR/02/7,* Prepared by Cascade Consulting for UKWIR.

- Severn Trent Water draft 2013 DP
- Option components, location, construction and operation details
- Likelihood of deployment
- Amount of water provided (taking yield uncertainty into account)
- Key elements of the baseline environment, such as proximity to designated sites
- The Habitats Regulation Assessment screening report[23]
- Environmental Assessment Reports and Preliminary Environmental Assessment Reports prepared for each drought permit/order option

Objectives or key questions that are not supported by consultation discussions or information presented in the above reports have been evaluated using spatial analysis, professional judgement and appropriate guidelines.

The performance of options against each objective, indicator or key questions is explained in Section 3.3.

23 Severn Trent Water (2013) *Drought Plan: Habitats Regulation Assessment Screening Report*. Report prepared by Cascade Consulting.

Table 3.1 Derivation of SEA Objectives and Indicator Questions

SEA TOPIC	PPP Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
Biodiversity, flora and fauna	Protection and enhancement of biodiversity, particularly internationally and nationally designated sites.	The need to protect and enhance the region's biodiversity, particularly protected sites designated for nature conservation. The need to take opportunities to improve connectivity between fragmented habitats and take a catchment-scale or landscape-scale approach to biodiversity management. The need to avoid activities likely to cause irreversible damage to the natural environment and natural heritage.	To protect and enhance biodiversity, ecological functions, capacity and habitat connectivity.	Will it protect the most important sites for nature conservation (SAC, SPA, cSACs, pSPAs, Ramsar, SSSIs)? Will it avoid Likely Significant Effects on European sites (cross-referencing to the HRA for the Draft Drought Plan)? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities? Will it avoid causing habitat fragmentation and/or provide opportunities for new habitat creation or restoration and link existing habitats, including for fish passage?
	Promote a catchment-wide or landscape-scale approach to biodiversity management to ensure better protection of the natural environment and heritage.			
	To achieve favourable condition for priority habitats and species, including UK BAP habitats and species.			
	Avoidance of activities likely to cause damage to nature conservation and natural heritage.			
	Recognise the wider benefits of eco-system services through support for well-functioning ecosystems, respect environmental limits and capacities, and maintain/enhance coherent ecological networks, including provision for fish passage and connectivity for migratory/mobile species.			
	Strengthen the connections between people and nature and realise the value of biodiversity.	The need to engage more people in biodiversity issues so that they personally value biodiversity and know what they can do to help.	To strengthen the connections between people and nature and realise the value of biodiversity.	Will it improve access to areas of natural heritage interest? Will it provide educational or information resources for the public? Will it create areas of improved biodiversity in urban or deprived areas?
Population and human health	To ensure reliable and sustainable supplies of water are maintained for all.	The need to ensure essential water supplies are safeguarded to all communities to protect public health and economic activity.	To improve human health and well-being of the area, improve access to recreation and the environment, and reduce inequalities.	Will it help to ensure access to a secure and reliable supply of drinking water that contributes to maintaining public health Will it avoid negative effects on human health or quality of life, for example through nuisance? Will it benefit areas considered to be significantly more deprived than others in the region? Will it improve access to open spaces and the natural and historic environment, and provide opportunities for formal and informal recreation to local residents, including navigation and angling? Will it promote the value of water and the need for its sustainable use?
	To ensure all communities have access to a clean, safe and attractive environment in which people can enjoy and take pride.	The need to ensure continued improvements in levels of health across the region, particularly in urban areas and deprived areas.		
	Water resources play an important recreation role. Effective water resource management can create opportunities for regeneration, tourism and the wider economy.	The need to ensure a balance between different aspects of the built and natural environment that will help to provide opportunities for local residents and tourists, including access to recreational resources and the natural and historic environment.		
	Increase awareness of sustainability, the true value and health benefits of water and its efficient use.	The need to promote the health benefits of drinking water, encourage efficient use of water and ensure people understand the value of water.		
Material assets and resource use	Promote sustainable production and consumption whilst seeking to reduce the amount of waste generated by using materials, energy and water more efficiently.	The need to minimise the consumption of resources, including water and energy.	To reduce, and make more efficient, the domestic, industrial and commercial consumption of natural resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it help to minimise the demand for resources and promote their efficient use (including water)? Will it minimise the use of energy and promote energy efficiency or support the use of sustainable/renewable energy? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling?
	Consider issues of water demand, water supply and water quality in the natural environment and ensure a sustainable use of water resources.			
	Maintain a reliable public water supply and ensure there is enough water for human uses, as well as providing an improved water environment.			
	Minimise the production of waste, ensure waste management is in line with the 'waste hierarchy', and eliminate waste sent to landfill.	The need to reduce the total amount of waste produced in the region, from all sources, and to reduce the proportion of this waste sent to landfill.		

SEA TOPIC	PPP Key Messages	Baseline Key Issues	SEA Objectives	ndicator Questions
Water	Maintain and improve water quality (surface waters and groundwater). Improve the quality of the water environment and the ecology which it supports, and continue to provide high levels of drinking water quality. Expand the scope of water protection to all waters, surface waters and groundwater.	The need to maintain and further improve the region's river, lake, reservoir and estuarine waters in terms of their ecology and uses The need to maintain and improve the quantity and quality of surface water and groundwater resources in the region.	To maintain or improve the quality of rivers, lakes, reservoirs, groundwater, estuarine and coastal waterbodies.	Will it minimise risks of adverse effects on water quality? Will it affect WFD compliance (supporting elements to Good Ecological Potential/Status, including hydromorphology)? Will it affect bathing water compliance? Will it avoid contamination of groundwater?
	Ensure appropriate management of abstraction and protect flow and level variability across the full range of regimes from low to high conditions.	The need to sustain and improve the resilience, flexibility and sustainability of water resources in the region. The need to ensure sustainable abstraction, balancing the needs of consumers for a reliable supply of water with the protection of the environment.	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability.	Will it help to minimise risks associated with unsustainable abstraction of ground and surface waters? Will it abstract from a water resource with resource availability (with reference to CAMS status and WFD considerations)? Will it alter the flow or level regime or residence time of surface waters or groundwaters?
	Develop a resilient and flexible water management approach to cope with changing climate, population and economic conditions. Balance the abstraction of water for supply with the other functions and services the water environment performs or provides. Encourage more efficient use of water and promote awareness of water sustainability.	The need to improve the resilience, flexibility and sustainability of water resources in the region. The need to ensure sustainable abstraction, balancing the needs of consumers for a reliable supply of water with the protection of the environment. The need to ensure that people understand the value of water.	To ensure reliable, resilient and sustainable water resources for people, economy and the environment. To increase awareness of water sustainability, its efficient use and the ecosystem functions that rely on water resources.	Will it enable flexible control over the level of abstraction at short notice in response to changing environmental conditions? Will it enable a sustainable use of water resources that balances demand for water with environmental protection? Will it encourage efficient water use? Will it contribute towards improving the awareness of water sustainability and its true value?
	Steer new development to areas with the lowest probability of flooding and manage any residual flood risk, taking account of the impacts of climate change.	The need to reduce and manage flood risk. The need to ensure resilience of infrastructure against flood risk	To reduce and manage fluvial and surface water flood risk	Will it avoid reducing flood plain storage, or provide opportunities to improve flood risk management, whilst avoiding flood damage of new assets (surface or fluvial)?
Soil, geology and land use	Maintain the quality and diversity of geology and soils, which can be lost or damaged by insensitive development.	The need to protect geological features of importance and maintain and enhance soil function and health.	To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to sustainable land use management (rural and urban).	Will it avoid damage to, and protect, geologically important sites? Will it protect and enhance the quality of soils? Will it ensure efficient and sustainable use of land (e.g. make use of previously developed land)? Will it contribute towards a catchment-wide or landscape-scale approach to land use management? Will it avoid impacts to naturally occurring geophysical processes?
	Ensure that soils will be protected and managed to optimise the varied functions that soils perform for society (e.g. supporting agriculture and forestry, protecting cultural heritage, supporting biodiversity, as a platform for construction), in keeping with the principles of sustainable development.	The need to make use of previously developed land (brownfield land) and to reduce the prevalence of derelict land in the region. The need to protect, maintain and enhance peat land and organic soils within the region.		
	Promote catchment-wide approach to land use management in order to benefit natural resources, reduce pollution and develop resilience to climate change.	The need to manage the land more holistically at the catchment or landscape scale, benefitting landowners, other stakeholders, the environment and sustainability of natural resources. The need to protect, maintain and enhance peat land and organic soils within the region.		
	Promote mixed use developments, and encourage multiple benefits from the use of land in urban and rural areas, recognising that some open land can perform many functions.			
	Encourage reuse of land that has been previously developed (brownfield land), provided that it is not of high environmental value.			

SEA TOPIC	PPP Key Messages	Baseline Key Issues	SEA Objectives	ndicator Questions
Air and climate	Cut the UK's carbon dioxide emissions by 80% by the year 2050, including through the contributions being made by water companies to reduce GHG emissions associated with water supply. Reduce the effects of air pollution on ecosystems. Improve overall air quality. Sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas	The need to mitigate against climate change through the reduction in greenhouse gas emissions in order to contribute to climate change risk reduction over the long term. The need to reduce air pollutant and greenhouse gas emissions arising from industrial processes, energy production and transport and limit air emissions to comply with air quality standards.	To reduce air pollutant and greenhouse gas emissions.	Will it reduce or minimise air pollutant and greenhouse gas emissions? Will it reduce emissions to air in areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat or more deprived area)?
	Minimise energy consumption, support the use of sustainable/renewable energy and improve resilience to climate change. Build in adaption to climate change to future planning and consider the level of urgency of associated risks of climate change impacts accordingly.	The need to adapt to the impacts of climate change for example through management of flood risk, sustainable water resource management, specific aspects of natural ecosystems (e.g. connectivity) as well as accommodating potential opportunities of climate change.	To adapt and improve resilience to the threats of climate change.	Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience to likely effects of climate change (e.g. by conjunctive use of water sources and strengthening water network connectivity)? Will it create opportunities to benefit from potential effects of climate change?
Archaeology and cultural heritage	Protection and enhancement of historic assets and their settings, particularly those of international and national importance. Ensure active management of the Region's environmental and cultural assets. Ensure adverse effects resulting from changes to water level (surface or sub-surface) on heritage assets including archaeology are avoided. Promote heritage and landscape (urban and rural) as central to the culture of the region. Conserve and enhance distinctive characteristics of landscape and settlements, particularly designated sites and in National Parks.	The need to protect and enhance heritage assets, particularly those which are dependent upon or sensitive to the water environment.	To protect and enhance heritage assets, their setting and the historic environment.	Will it avoid damage to and protect designated assets and their settings? Will it maintain and enhance undesignated assets including palaeo-environmental deposits? Will abstraction alter the hydrological environment of water-dependent assets? Will it improve access, value or enjoyment of heritage assets and maintain or enhance the character of historic landscapes and settlements?
Landscape and visual amenity	Protection and enhancement of urban and rural landscapes (including designated landscapes, landscape character and the countryside) Take account of the different roles and character of different areas, promoting the vitality of main urban areas, protecting the Green Belts around them, recognising the intrinsic character and beauty of the countryside and supporting thriving rural communities within it. Enhance the value of the countryside by protecting the natural environment for this and future generations. Improve access to valued areas of landscape character in sustainable ways to enhance its enjoyment and value by visitors and stakeholders.	The need to protect and improve the natural beauty of the region's AONBs, Peak District National Park and other designated landscapes, and to conserve and enhance the distinctive character of the landscape (rural and urban) outside of designated landscapes.	To protect and enhance the quality of, and improve access to, designated and undesignated rural and urban landscapes, Green Belt and the built environment.	Will it avoid adverse effects and enhance designated landscapes (including National Parks and AONBs) and Green Belt land? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character (urban or rural)? Will it ensure good design standards for the built environment?

3.3 PRIMARY ASSESSMENT

In line with the Scoping Report, an appraisal framework was developed and used to assess each of the drought options against the SEA objectives (as set out in **Table 3.1**). The appraisal framework has been applied to test the performance of the drought options against the SEA objectives to see how far they go towards meeting them.

The framework sets out the SEA topics and objectives, along with an evaluation of the potential residual effects of the drought option, following application of suitable mitigation measures, on the objectives for each topic (with reference to the key questions set out in **Table 3.1**). Where quantitative information was available for an option (e.g. as identified by an Environmental Assessment Report), this has been used to inform the residual impact. The assessment also takes into account the information from the HRA reports on potential impacts on designated features and species.

The SEA impact evaluation includes consideration of the nature of the impact, likelihood, duration and permanence in compliance with the criteria for determining the likely significance of effects specified in the SEA Directive Article 3(5) and Annex II, and the SEA Regulations Part 2, Regulation 9(2a) and Schedule 1. With respect to duration, short-term impacts are defined in this Environmental Report as those that last only for the period of the drought option implementation. Medium term impacts are those that extend beyond the drought option implementation period for a number of seasons. Long term impacts are assessed as those that persist beyond three years.

Secondary, cumulative and synergistic effects are considered in terms of those that may arise between schemes, between preferred programmes and between the DP and other plans. Consideration of these effects is also required by the SEA Regulations (Schedule 1).

Given the differences in available data and information that may occur between different schemes and for different SEA objectives, a brief commentary on the level of confidence relating to the assessments is also provided in line with feedback on the SEA Scoping Report from consultees.

Figure 3.1 sets out how the effect significance will be assigned according to a seven point scale that combines impact magnitude and receptor value/sensitivity for both adverse and beneficial effects. There are two additional categories for 'Uncertain' and 'Mixed' effects. Following feedback from stakeholders on recent SEA scoping consultations, the seven point scale has been adopted to provide an appropriate level of distinction between effects. This approach accords with that commonly employed in Environmental Impact Assessment (EIA), and provides a general indication of

significance.

Figure 3.1 Effect Significance[24]

Significance of Effect		Value/sensitivity of receptor		
		High	**Medium**	**Low**
Effect magnitude	**High**	Major Beneficial / Major Adverse	Major Beneficial / Major Adverse	Moderate Beneficial / Moderate Adverse
	Medium	Major Beneficial / Major Adverse	Moderate Beneficial / Moderate Adverse	Minor Beneficial / Minor Adverse
	Low	Moderate Beneficial / Moderate Adverse	Minor Beneficial / Minor Adverse	Negligible

General Significance Definitions:

Major - effects represent key factors in the decision-making process. They are generally associated with sites and features of national or regional importance and resources/features which if lost, cannot be replaced or relocated.

Moderate - effects are likely to be important considerations at a regional or district scale. If adverse, they are likely to be of potential concern, depending on the relative importance attached to the issue during the decision-making process.

Minor - effects are not likely to be decision-making issues. Nevertheless, the cumulative effect of such issues may lead to an increase in the overall effects on a particular area or on a particular resource.

Negligible - effects which are not perceptible, being within normal bounds of variation or the margin of forecasting error.

The SEA effect significance for each objective for each drought option is colour coded according to the legend presented in **Figure 3.2**. The colour coding represents a range from major adverse residual impact in red through to major beneficial impacts in dark green. Colours are also assigned for the 'mixed' and 'uncertain' categories.

24 Adapted from DCLG (2006) *Environmental Impact Assessment: A Guide to Good Practice and Procedures*. Consultation paper.

Figure 3.2 Colour coding of effect significance

Significance of Effect	
+++	Major Beneficial
++	Moderate Beneficial
+	Minor Beneficial
N	Negligible
-	Minor Adverse
--	Moderate Adverse
---	Major Adverse
U	Uncertain
M	Mixed beneficial/adverse impact

The appraisal framework table has been completed for each drought option (as identified in Section 1.4.2) and is presented in full in **Appendix E**. A summary of the assessment is presented in Section 4 as a colour-coded matrix which summarises the likely significance of impacts against each SEA topic (drawn from the completed appraisal framework tables in **Appendix E**).

3.4 INTERACTIONS BETWEEN OBJECTIVES

Schedule 1 of the SEA Regulations requires that the inter-relationship between SEA issues should be explored. The matrix in **Figure 3.3** identifies potential interactions between the proposed SEA objectives. In most cases, either no interactions occur, or the interactions are identified as compatible.

The matrix identifies a mixed interaction, with potential compatibility and incompatibility between the objectives to reduce and manage flood risk and to maintain landscape quality, as flood risk management infrastructure could have a positive or adverse influence on landscape. A similar mixed interaction is identified between the objective to provide climate change resilience and the objective to maintain landscape quality; actions to improve climate change resilience could be considered to have a positive or negative influence on landscape, depending on the nature and development of the activity (e.g. construction of new infrastructure).

Figure 3.3 SEA Objective Interaction Matrix

SEA Objectives										
To strengthen the connections between people and nature and realise the value of biodiversity.	✓ - Maintenance & enhancement of sites and interpretation of their biodiversity value will encourage people to appreciate their value									
To improve human health and well being of the area, improve access to recreation and the environment, and reduce inequalities.	✓ - Maintenance of the condition of sites will encourage people to visit, enhancing their recreational use value and associated health benefits	✓ - Increased public enjoyment of biodiversity will encourage recreational use and access to the environment								
To reduce, and make more efficient, the domestic, industrial and commercial consumption of natural resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	No direct interactions	✓ - Increased public awareness of biodiversity may encourage recycling and waste awareness	No direct interactions							
To maintain or improve the water quality of rivers, lakes, groundwater, estuarine and coastal water bodies.	✓ - Maintenance of the condition of water dependent sites will require good standards of water quality	✓ - Improved water quality, and general habitat quality, may encourage public appreciation	✓ - Improved water quality, and general habitat quality, may encourage public access and recreational use	No direct interactions						
To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability.	✓ - Maintenance of the condition of water dependent features and sites will require water resources management and provision for environmental demands	No direct interactions	No direct interactions	✓ - More efficient use of water will reduce demands	✓ - Improved management of water quantity, through abstraction management, will in turn help to maintain or improve water quality					
To reduce and manage fluvial and surface water flood risk.	✓ - Provision for flood storage can often provide associated benefits in terms of habitats	✓ -Potential for improved appreciation of biodiversity from flood risk management activities	✓ -Potential for recreational and access improvements from flood risk management activities	No direct interactions	No direct interactions	No direct interactions				
To ensure reliable, resilient and sustainable water resources. To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources	✓ - Provision of educational material at designated site visitor centres should promote water efficiency and awareness. Increased efficiency will reduce adverse abstraction impacts	✓ - Increased awareness of the environmental functions and value of water may improve environmental awareness	✓ -Resilient water resources will help protect public health and help maintain recreational and environmental amenity	✓ -Increased awareness should encourage water efficiency	No direct interactions	✓ - Improved awareness and water efficiency will reduce demand and in turn, abstractions	No direct interactions			
To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to sustainable land use management (rural and urban).	✓ - Biodiversity would benefit from a more holistic approach to catchment management and protection of important sites for geology	No direct interactions	No direct interactions	No direct interactions	✓ - Catchment management can provide benefits in terms of both water quality and quantity	✓ - Sustainable abstraction should be enabled by effective catchment management of water resources	✓ - Catchment management can enable improved flood risk management	No direct interactions		
To reduce air pollutant and greenhouse gas emissions.	✓ - Improved air quality will benefit biodiversity. Wetlands provide ecosystem service of carbon sequestration.	No direct interactions	✓ - Reduced emissions should reduce respiratory complaints	✓ - Reduced consumption of resources, landfill and waste incineration will help to reduce emissions	No direct interactions	✓ - Abstraction requires energy. Its sustainable management should in turn reduce emissions generated	No direct interactions	No direct interactions	✓ - Reduced climate change impacts may include flooding and soil desiccation impacts	
To adapt and improve resilience to the threats of climate change.	✓ - Provision of water storage reservoirs/flood storage may also provide habitats	✓ - Potential for habitat creation & potential for interpretation and information for the public.	✓- Provision of water storage reservoirs/flood storage may also provide recreational resources, particularly in an urban environment	No direct interactions	✓- Measures to improve water quality will provide resilience to adverse effects of climate change	No direct interactions	✓ - Improved flood risk management will be important aspect of adapting to climate change impacts	✓ - Water resources planning and measures provide increased resilience to threats of climate change	No direct interactions	No direct interactions
To protect and enhance heritage assets, their setting and the historic environment.	✓ - Protection of buried historical assets often requires similar measures, in terms of limiting disturbance and water level management, as that required to maintain habitats	No direct interactions	✓ - Cultural heritage sites can often provide recreational access and enjoyment of the environment	No direct interactions	No direct interactions	✓ - Protection of buried historical assets may benefit from reduced levels of abstraction where water levels are important in preservation	✓ - Improved flood risk management will help to protect cultural heritage	No direct interactions	No direct interactions	✓ - Reduced emissions may help to protect cultural heritage from effects such as acid rain
To protect, enhance the quality of and improve access to designated and undesignated rural and urban landscapes, Green Belt and the built environment.	✓ - Protection and enhancement of biodiversity, including specific habitats and species, will also help to protect landscape quality, and vice versa	✓ - Improved access and quality will increase awareness of the value of biodiversity	✓ - Improved access and quality will increase recreational use	No direct interactions	✓ - Maintenance of water quality will help to protect quality of landscapes featuring water	✓ - Maintenance of surface water and groundwater levels will help to protect quality of landscapes featuring water	✓/x- Flood risk management infrastructure may be considered to enhance or detract from landscape quality	No direct interactions	✓ - Catchment management approaches, and improved land and soil management, may improve landscape quality	No direct interactions
SEA Objective	To protect and enhance biodiversity, ecological functions, capacity and habitat connectivity.	To strengthen the connections between people and nature and realise the value of biodiversity.	To improve human health and well being of the area, improve access to recreation and the environment, and reduce inequalities.	To reduce, and make more efficient, the domestic, industrial and commercial consumption of natural resources , minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal water bodies.	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability.	To reduce and manage fluvial and surface water flood risk.	To ensure reliable, resilient and sustainable water resources. To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources	To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to sustainable land use management.	To reduce air pollutant and greenhouse gas emissions.

Key
✓ - COMPATIBLE
No interactions
X - INCOMPATIBLE
✓/X- MIXED

To adapt and improve resilience to the threats of climate change.	To protect and enhance heritage assets, their setting and the historic environment.
✓/x- Water supply infrastructure may be considered to enhance or detract from landscape quality dependent on the type and nature of infrastructure	✓ - Protection of the historic environment will also help to protect landscape quality

3.5 SECONDARY, CUMULATIVE AND SYNERGISTIC ENVIRONMENTAL EFFECTS ASSESSMENT

Schedule 2(6) of the SEA Regulations requires the assessment of "The likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects….". In this report, "cumulative effects" is taken to include secondary and synergistic effects (those which interact to produce an impact greater than the sum of the individual parts, as suggested by the Practical Guide).

Because the precise combination of options that would be deployed in any one drought cannot be predetermined, it is important to understand those options in the plan that are not mutually exclusive, or that combinations of options would not cause significant adverse impacts. An assessment was therefore undertaken examining the likely significant effects of each of the drought options individually; in combination with each other; and in combination with the implementation of other plans and programmes. In assessing these effects, consideration has been given to other factors which may affect the receiving environment in the short, medium and long term.

The following cumulative, or in-combination, assessments have been undertaken:

1. Within Severn Trent Water's entire water supply area, assessment of cumulative impacts of each demand management drought option with every other demand management drought option. Note that demand management drought options are consistent across the whole of Severn Trent Water's region. Demand management measures serve to reduce pressure on water resources by reducing the demand for water. Therefore, demand management measures have not been assessed in detail against each supply side and drought permit/order option, other than to acknowledge that they will have a net positive effect by reducing pressure on water resources.
2. For each supply side option, assessment of the cumulative impacts of the option with Severn Trent Water's existing abstraction licences that operate within the zone of influence of the drought option.
3. For each supply side option, assessment of cumulative impacts with any other supply side option. Mutually exclusive options (e.g. those that draw upon the same resource or use the same site) have been identified.
4. Assessment of cumulative impacts of Severn Trent Water's DP with drought options included in Environment Agency DPs (see Section 5).

5. Assessment of cumulative impacts of Severn Trent Water's DP with drought options included in the Canal and River Trust[25] DPs (see Section 5).
6. Assessment of cumulative impacts of Severn Trent Water's DP with drought options included in other neighbouring water company DPs (see Section 5).
7. Assessment of cumulative impacts of Severn Trent Water's DP with other relevant policies and plans (see Section 5).

DPs comprise a basket of measures, the implementation of which are dependent on the particular drought conditions experienced and are subject to temporal, spatial and other factors. The exact timing of implementation of drought options will not be known until a drought is experienced.

One of the limitations of the cumulative or in-combination assessment of Severn Trent Water's draft DP is that whilst an environmental appraisal of each drought option can be undertaken, the lack of predictability of which options will be implemented in any particular drought event means that it may be impossible to provide an accurate cumulative assessment of the impacts of the plan for a possible future drought event.

Cumulative assessments of drought options with each other have been undertaken assuming as a worst case that the operation of the two options could occur simultaneously. Spatial proximity and therefore potential impacts on a common receptor is the primary consideration (e.g. the same designated area or reach of river).

Due to the uncertainty of timing of implementation of drought options, assessments of each drought option with every other drought option have been undertaken with the intention that in the event of a drought, the findings of the SEA be reviewed and a cumulative assessment made of the options proposed for implementation at that time, based on the findings of the one-on-one assessments presented in Section 5.4.

3.6 LIMITATIONS OF THE STUDY

SEA is a high level assessment aimed at highlighting potential environmental concerns. The environmental data used in this assessment are based on that which is readily available from existing sources, e.g. statutory organisations and environmental assessments of drought options already undertaken by Severn Trent Water. No primary research or survey work has been carried out specifically to

25 British Waterways ceased to exist on 2nd July 2012. In England and Wales, the Canal and River Trust was set up in its place.

inform the SEA and therefore it is possible that at the individual option level, there may be additional environmental issues that could have an influence on a drought option.

Limitations of the cumulative, or in-combination assessment of Severn Trent Water's draft DP should also be noted as discussed in Section 3.5, as implementation of drought options are dependent on the particular drought conditions experienced meaning that it may be impossible to provide an accurate cumulative assessment of the impacts of the plan for a possible future drought event.

Where particular limitations or outstanding issues are known, these are briefly described in the SEA appraisal tables for the relevant drought option concerned.

4 ASSESSMENT OF DROUGHT OPTIONS

4.1 ASSESSMENT OF SCHEMES AGAINST SEA OBJECTIVES

The assessment of each of the DP drought options has been carried out in accordance with the methodology described in Section 3. Appraisal framework assessment tables have been completed for each drought option, and are presented in full in **Appendix E**. A summary of the effect significance assessment for each option is presented in this section as colour-coded matrices.

4.2 DEMAND-SIDE OPTIONS

Table 4.1 provides the summary of SEA assessment conclusions for each of the demand-side options in Severn Trent Water's draft DP with the detailed assessment for each option provided in **Appendix E**. Overall, demand side measures serve to reduce pressure on water resources in drought conditions by reducing consumer demand for water, and therefore reducing the volume of water required to be abstracted from sources. However, as measures move from voluntary action to mandatory restrictions, there is a greater mix of beneficial and adverse effects as the scope of water use restrictions is widened. The progression from the Temporary Use Ban to a drought order to ban non-essential water use leads to a step-change in the balance between beneficial and adverse impacts, both on the socio-economy of the Severn Trent Water region (greater range of water-dependent businesses affected) and on the urban environment (no filling of ponds, restrictions on cleaning building and vehicles, dust suppression activity prohibited).

The trigger levels and order of implementation of demand-side options in the DP reflect the increasing level of impact of each measure and in comparison to the impacts of supply-side measures. A balanced approach between impacts on the water consumer and impacts on the environment needs to be achieved in determining the appropriate sequencing of implementation of drought management options.

Table 4.1 Visual evaluation matrix summary for demand-side options

Demand-Side Drought Option	SEA Topic													Commentary
	Biodiversity, flora and fauna		Population and human health	Material assets and resource use	Water				Soil, geology and land use	Air and climate		Archaeology and cultural heritage	Landscape and visual amenity	
	1.1	1.2	2.1	3.1	4.1	4.2	4.3	4.4	5.1	6.1	6.2	7.1	8.1	**Corresponding SEA Objective Number (Table 3.1)**
Drought publicity campaigns	+	+	+	+	+	+	+	n/a	+	N	N	N	N	This option has beneficial effects, encouraging water consumers to use water wisely so as to help conserve remaining water resources (increase security of supply) and reduce the amount of water that needs to be abstracted from the water environment during dry weather conditions.
Increase water conservation campaign	+	+	+	+	+	+	+	n/a	+	-	N	N	N	Minor beneficial effect on water efficiency and sustainable use. Minor adverse impact on GHG emissions through small, temporary increase resulting from increased number of vehicle journeys made to survey premises, fit water saving devices.
High profile promotion of free meter option	+	+	+	+	+	+	+	n/a	+	-	N	N	N	Minor beneficial effect on water efficiency and sustainable use. Minor adverse impact on GHG emissions through small, temporary increase resulting from increased number of vehicle journeys made to survey premises, fit water meters.
Increased leakage detection and repair activity	+	+	+	+	+	+	+	n/a	+	-	N	N	N	This option has generally beneficial effects by reducing the amount of water required to be abstracted from the water environment during dry weather conditions and conserve water resources (increase security of supply). There are some adverse effects due to additional vehicle journeys and disruption to traffic, along with temporary small-scale excavation and construction activities.
Temporary use ban	++	+	M	+	+	+	+	n/a	+	N	N	N	-	This option has generally beneficial effects by reducing the amount of water required to be abstracted from the water environment during dry weather conditions and conserve water resources (increase security of supply). There are some adverse effects due to impact on certain socio-economic activities (such as turf, plants and gardening sales) and on urban landscapes.

Demand-Side Drought Option	SEA Topic													Commentary
	Biodiversity, flora and fauna		Population and human health	Material assets and resource use	Water				Soil, geology and land use	Air and climate		Archaeology and cultural heritage	Landscape and visual amenity	
Drought Order to Prohibit Non-Essential Water Use	M	+	M	+	+	+	--	n/a	+	-	N	-	-	This option has mostly beneficial effects on the environment by reducing the amount of water required to be abstracted from the water environment during dry weather conditions and conserves water resources (increase security of supply). There are some potential adverse effects on the environment (e.g. restriction on filling ponds and use of water for dust suppression) and water-dependent heritage assets. There are some adverse socio-economic impacts on certain business activities, such as vehicle washing.

Legend

Significance of Effect	
+++	Major Beneficial
++	Moderate Beneficial
+	Minor Beneficial
N	Negligible
-	Minor Adverse
--	Moderate Adverse
---	Major Adverse
U	Uncertain
M	Mixed beneficial/adverse impact

4.3 SUPPLY SIDE OPTIONS

A visual summary of SEA conclusions for each of the supply side options is provided in **Table 4.2**. The completed appraisal tables for each of the drought options are provided in **Appendix E.** There is some connectivity between Water Resource Zones (WRZs) in the Severn Trent Water supply area[26] but this does not extend to connections between the WRZs in which the drought options are located: the Strategic Grid WRZ, North Staffordshire WRZ and Forest and Stroud WRZ. Consequently, the assessment of drought options and discussion of implementation sequencing is restricted to options within the same WRZ.

Strategic Grid

The assessment highlights those supply side options with lower impacts that could therefore be considered for earlier implementation, with other options implemented later if required if drought conditions intensify. The four non-drought permit options (Norton C & D Boreholes, Beechtree Lane Borehole, Siskin Drive and Rothley Brook) have been assessed as having some mixed impacts (adverse and beneficial) and some beneficial impacts on some SEA topic areas, with negligible adverse effects on the remaining topics. The River Avon at Stareton drought permit option was assessed as having a negligible impact on biodiversity whilst the River Leam at Leamington was assessed as having a minor adverse impact on biodiversity.

The River Derwent at Ambergate drought permit option was assessed as having a moderate adverse impact on heritage assets due to the impact on the Derwent Valley Mills World Heritage Site of lower levels in adjacent sections of the River Derwent. If drought conditions dictated the need for drought action in that area then the closely located Derwent Valley Reservoirs (Ladybower Reservoir) drought permit option would be a preferable option as it was assessed as having no greater than minor adverse impacts.

The River Severn at Trimpley drought permit/drought order option was assessed as having major adverse impacts on water quality and hydrodynamics. The other options in the Strategic Grid WRZ, mentioned above, would be more sustainable and preferable to this option. Sequencing of implementation will however be dependent on the spatial distribution of drought, prevailing supply-demand conditions and the available infrastructure to move water to areas of greatest need within the Strategic Grid system.

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26 Severn Trent Water (2010) *Severn Trent Water WRZ Definition Summary Report*. Prepared by Atkins.

North Staffordshire

There is one licensed but "stood down" water source option (Abbey Green Borehole for non-drought permit use) and one drought order/permit option in the North Staffordshire WRZ (Tittesworth Reservoir and River Churnet). The Abbey Green Borehole option would operate within existing abstraction licence limits and transfers water directly into a treatment works, consequently there are no adverse impacts associated with the operation of this option. No significant adverse effects have been identified for the Tittesworth Reservoir and River Churnet drought permit option, but there may be minor adverse impacts on flora, fauna and biodiversity due to possible minor adverse effects on several species of fish.

Forest and Stroud

There is only one drought order option in the Forest and Stroud (River Wye at Wyeland). This option has potential for major adverse impacts on European designated sites and sites of special scientific interest (SSSIs).

Table 4.2 Visual evaluation matrix summary for supply-side options

WRZ	Option	SEA Topic													Summary of potential impacts
		Biodiversity, flora and fauna		Population and human health	Material assets and resource use	Water				Soil, geology and land use	Air and climate		Archaeology and cultural heritage	Landscape and visual amenity	
		1.1	1.2	2.1	3.1	4.1	4.2	4.3	4.4	5.1	6.1	6.2	7.1	8.1	**Corresponding SEA Objective Number (Table 3.1)**
Stood down Supply Options (operate within current abstraction licences)															
Strategic Grid West	Norton C & D Boreholes	M	n/a	M	N	M	M	+	n/a	n/a	N	+	n/a	n/a	Minor beneficial impacts on reliable and resilient water resources and resilience to climate change.
	Beechtree Lane Borehole	M	n/a	M	N	M	M	+	n/a	n/a	N	+	n/a	n/a	Minor beneficial impacts on reliable and resilient water resources and resilience to climate change.
Strategic Grid East	Rothley Brook	M	n/a	M	N	N	+	+	n/a	n/a	N	+	n/a	n/a	Minor beneficial impacts on reliable and resilient water resources and resilience to climate change.
Strategic Grid South	Siskin Drive	N	n/a	M	N	-	++	++	n/a	n/a	N	+	n/a	n/a	Moderate beneficial impacts on reliable and resilient water resources. Minor adverse impacts on water due to uncertain water quality impacts on Draycote Water.
North Staffordshire	Abbey Green Borehole for non-drought permit use	N	n/a	M	N	N	M	+	n/a	n/a	N	+	N	n/a	Minor beneficial impacts on reliable and resilient water resources and resilience to climate change.
Drought Permit/Order Options															
Strategic Grid East	Derwent Valley Reservoirs (Ladybower Reservoir)	-	n/a	M	N	N	-	++	n/a	N	N	+	M	M	Moderate beneficial impacts on reliable and resilient water resources. Minor adverse impacts on fish, macroinveretbrates and downstream designated sites.

WRZ	Option	SEA Topic													Summary of potential impacts
		Biodiversity, flora and fauna		Population and human health	Material assets and resource use	Water				Soil, geology and land use	Air and climate		Archaeology and cultural heritage	Landscape and visual amenity	
		1.1	1.2	2.1	3.1	4.1	4.2	4.3	4.4	5.1	6.1	6.2	7.1	8.1	Corresponding SEA Objective Number (Table 3.1)
	River Derwent at Ambergate	-	n/a	M	N	-	-	+++	n/a	N	N	+	--	M	Major beneficial impacts on reliable and resilient water resources. Minor adverse impacts on biodiversity (fish and macroinvertebrates. Minor adverse impact on water quality due to risk of reduced dilution of pollutants. Moderate adverse impacts on water dependant heritage assets.
Strategic Grid South	River Leam at Leamington[27]	-	n/a	M	N	-	M	+	n/a	N	N	+	N	M	Minor beneficial impacts on reliable and resilient water resources and resilience to climate change. Minor adverse impacts on biodiversity (fish, water vole, otter).
	River Avon at Stareton	N	n/a	M	N	-	M	+	n/a	N	N	+	N	M	Minor beneficial impacts on reliable and resilient water resources and resilience to climate change. Minor adverse impacts on water quality.
Strategic Grid West	River Severn at Trimpley	-	n/a	M	N	---	---	+++	n/a	n/a	N	+	N	M	Major adverse impacts of hydrodynamics and water quality. Major beneficial impacts on reliable and resilient water resources. Minor adverse impacts on biodiversity due to uncertainty surrounding impact on designated sites.
North Staffordshire	Tittesworth Reservoir and River Churnet	-	n/a	M	N	-	U	+	n/a	n/a	N	+	N	M	Minor beneficial impacts on reliable and resilient water resources and resilience to climate change. Minor adverse impacts on fish. Minor adverse impact on water quality due to risk of reduced water quality downstream of borehole discharge point.
Forest and Stroud	River Wye at Wyeland	---	n/a	M	N	U	U	+++	n/a	N	N	+	N	-	Major adverse impacts on biodiversity due to uncertain impacts on designated sites. Minor adverse impacts on visual amenity due to lower river and reservoir levels. Major beneficial impacts on reliable and resilient water resources.

27 River Leam at Leamington and River Avon at Stareton would form part of one drought permit application.

Legend

Significance of Effect	
+++	Major Beneficial
++	Moderate Beneficial
+	Minor Beneficial
N	Negligible
-	Minor Adverse
--	Moderate Adverse
---	Major Adverse
U	Uncertain
M	Mixed beneficial/adverse impact

4.4 SUMMARY

All of the twelve supply-side options are based on abstracting more water from existing licensed water sources. Five of these options involve operation within existing abstraction licence conditions, but the remainder would require an application to be made for a drought permit or drought order to authorise additional abstraction. No construction works are required to make use of these options, except for the possible need to carry out minor refurbishment works associated with some of the groundwater source options.

Operationally, the supply-side options are assessed as having a wide range of potential impacts, from major adverse effects on biodiversity, flora and fauna for some options to major beneficial effects for water resource reliability and resilience. The SEA assessment indicates those supply-side options with a lower level of impact that should be considered for implementation in the first stages of a developing drought. Options with a greater impact could be implemented later if the drought intensifies. However, selection of the appropriate option for implementation during a drought will also depend on a range of other factors: the amount of water made available; how effectively this water can be utilised; the spatial distribution of drought impact; prevailing environmental conditions and the time of year.

The SEA assessment highlights that most of the supply-side options considered for inclusion in the Draft Drought Plan would have no greater than minor adverse effects on the SEA topics. The groundwater options (re-commissioning of the Norton boreholes and Beechtree Lane borehole and utilising Abbey Green Borehole) and the remaining two licensed, but "stood down" water source options (Siskin Drive and Rothley Brook) have the least environmental impact, followed by the drought permit options for Tittesworth Reservoir and the River Churnet, River Leam at Leamington and the River Avon at Stareton. Drought permit options for the Derwent Valley Reservoirs and the River Derwent at Ambergate are assessed as having a slightly greater, but minor, adverse effects.

By contrast, the remaining two supply-side options have the potential for greater adverse environmental effects. The proposed drought permit and drought order options for the River Severn at Trimpley would authorise additional abstraction during times of low flow and river regulation, leading to lower river flows downstream with moderate adverse effects for water quality and aquatic ecology. The lower river flows resulting from the drought permit or order also have the potential to impact on the internationally important environment of the Severn Estuary which is designated as a Special Area of Conservation, Special Protection Area and a Ramsar site. However, work carried out to date indicates that even with the drought permit or drought order in place, flows in the River Severn downstream of Trimpley during

drought conditions may still be higher than would naturally have been expected due to the benefit of the River Severn flow regulation scheme. Consequently, significant adverse effects on the Severn Estuary are considered unlikely, but given the international environmental importance of the estuary, Severn Trent Water is currently carrying out more detailed investigations to confirm this provisional assessment. The findings of these investigations will be presented in an updated Environmental Assessment Report which is due to be completed by autumn 2013.

The drought order option for the River Wye at Wyelands in the Draft Drought Plan is likely to have major adverse effects on the environment. The River Wye is designated for its important aquatic habitats and species (including salmon, lamprey and shad fish species) as a Special Area of Conservation (SAC). The Environment Agency Wales has recently completed its review of Severn Trent Water's normal abstraction licence conditions for the River Wye at Wyelands and concluded that they may lead to adverse effects on the designated aquatic features of the River Wye SAC, particularly at times of low river flow. Consequently, a drought order to authorise greater abstraction at times of very low river flows during a drought is likely to exacerbate these impacts with adverse implications for the designated aquatic habitats and species.

The environmental implications of the River Wye drought order option have been recognised by Severn Trent Water and the company is working in partnership with Natural Resources Wales, Dŵr Cymru Welsh Water, Environment Midlands Region, Natural England and the Wye and Usk Foundation to further investigate the environmental impacts of public water supply abstractions from the River Wye. The investigations commenced in 2012 and will be continuing throughout 2013. Severn Trent Water will build on the findings of these investigations to examine the impacts of the River Wye drought order on the SAC which will be reported in an Environmental Assessment Report by December 2014.

In parallel, Severn Trent Water has produced its Draft Water Resources Management Plan 2013 and is also preparing its long-term Business Plan which will explore the longer term supply-demand balance in the area supplied from the River Wye and options for potentially reducing the risk of requiring a drought order in the medium to longer term.

Decisions on supply-side options to maintain essential water supplies in drought conditions also need to take account of the cumulative assessment of impacts. Greater environmental effects may arise when some of these options are operated in combination with other supply-side options or with programmes or plans of other organisations, particularly other water companies and the Environment Agency.

The magnitude of impact on SEA objectives of supply side options varies quite

considerably between the options, reflecting the scale of the abstraction changes being sought relative to low flow conditions and the sensitivity of the environment in the impacted reaches. The assessment showed that a distinction can be made between options that would be considered more sustainable than the others and which should be taken into account in deciding the sequencing of supply side option implementation. However, such decisions must also reference the cumulative impact of options implemented in the same river basin as discussed in Section 5.3.

5 CUMULATIVE ASSESSMENT

5.1 INTRODUCTION

The cumulative assessments presented in this section have been carried out in line with the methodology described in Section 3.5.

5.2 DEMAND SIDE OPTIONS

5.2.1 Cumulative effects of demand management schemes

The matrix in **Figure 5.1** illustrates potential incompatibility and cumulative impacts between demand management schemes. All options are mutually compatible with each other, with sequential implementation of each option reinforcing the customer messages about using water wisely and reporting leaks.

Figure 5.1 Cumulative impacts matrix: demand management measures

Drought publicity campaign	N/A					
Increase water conservation campaign		N/A				
High profile promotion of free meter option			N/A			
Increased leakage reduction and repair activity				N/A		
Temporary use (hosepipe) ban					N/A	
Non-essential use drought order						N/A
Drought Plan Options	Drought publicity campaign	Increase water conservation	High profile promotion of free meter option	Increased leakage reduction and repair activity	Temporary use (hosepipe) ban	Non-essential use drought order

KEY

	Mutually exclusive options, i.e. conflict would arise if operated simultaneously
	Potential beneficial effects if operated simultaneously
	Potential adverse effects if operated simultaneously
	No cumulative effects

5.2.2 Cumulative effects with supply side options

Demand management measures serve to reduce pressure on water resources and will have a positive influence on supply side options by reducing customer demand for water, and therefore reducing the need for additional abstraction from water sources.

5.3 SUPPLY SIDE OPTIONS

5.3.1 Cumulative Effects with Severn Trent Water's Existing Abstraction Licences

The supply-side options in the DP will generally operate simultaneously with Severn Trent Water's abstractions permitted under its water source abstraction licences. The supply-side options do not conflict with the abstraction of water under normal licence conditions and are mutually compatible.

The SEA assessment of each supply-side option has assessed the additional environmental impact of abstracting more water (or reducing compensation flow releases) over and above the pressures on the environment already in place from existing licensed abstractions. Cumulative effects between the supply-side options are assessed in section 5.3.2 below.

It should be noted that in drought conditions, the amount of water being abstracted from the environment will, in many cases, be less than the full licensed abstraction volumes due to river flow restrictions in abstraction licences and/or lower inflows or river flows precluding full abstraction. It is for this reason that drought permits and orders are required to be able to increase the amount of water available for abstraction.

5.3.2 Cumulative Effects Between Supply-Side Options

Cumulative impacts resulting from concurrent implementation of supply-side options have been assessed as follows (see **Figure 5.2**):

- River Derwent at Ambergate with Derwent Valley Reservoirs (Ladybower Reservoir)
    - Concurrent operation of these drought permits could potentially exacerbate the hydrological and ecological impact on the River Derwent. However the EAR concluded that the options were 'almost independent' because the River Derwent at Ambergate drought permit relates to flows with a flow exceedance in a range of about 75% to 85%, demonstrably not at the lowest flows in a year and especially in a drought period. By contrast, the Derwent Valley Reservoirs (Ladybower Reservoir) drought permit is triggered when reservoir storage falls below the drought permit line which occurs at the most critical time in a

drought of the lowest flows i.e. with flow exceedance of 95% or higher. The EAR concluded that although both of the drought permits may technically be in force at the same time, their effects will rarely be apparent together, for the reasons outlined above.

- The HRA screening report of the draft DP[28] concluded there would be no likely significant effects on the qualifying features of the Humber Estuary designated sites, given the minimal contribution of the River Derwent to Q_{95} flows into the Humber estuary.

- Tittesworth Reservoir and River Churnet with River Derwent at Ambergate and Derwent Valley Reservoirs (Ladybower Reservoir)
  - These three drought permit options are all located in the Humber River Basin, so consideration must be given to any cumulative impacts that concurrent operation could cause on the Humber Estuary European Marine Site. The HRA screening has concluded that cumulative impacts are likely to be negligible given the minimal contribution of the affected waterbodies to Q_{95} flows in the Humber Estuary.

- Tittesworth Reservoir and River Churnet with Derwent Valley Reservoirs (Ladybower Reservoir)
  - The operation of both drought permits have been assessed individually in the HRA screening report as having no likely significant effect on the South Pennine Moors SAC. Given the distance between the two drought permit sites and the lack of hydrologically connectivity, there would also not be any cumulative likely significant effects on this SAC.

- Tittesworth Reservoir and River Churnet with Abbey Green Borehole for non-drought permit use
  - The operation of both these drought options utilises the same resource. Abstraction from Abbey Green borehole will be within the current abstraction licence limits for the Leek North Borehole Group licence, although the Abbey Green resource is currently not utilised. The Tittesworth Reservoir and River Churnet option will require an amendment to the Abbey Green licence to allow for the change in use from water supply to compensation release. It is unlikely there will be available resources to operate both options simultaneously and they are thus considered to be mutually exclusive.

[28] Severn Trent Water (2013) *Habitats Regulation Assessment Screening of the Severn Trent Water Draft 2013 Drought Plan*. Prepared by Cascade Consulting.

- Norton C & D Boreholes, Beechtree Lane Borehole, River Leam at Leamington and River Avon at Stareton with River Severn at Trimpley

    - These five drought permit options are all located in the Severn River Basin, so consideration must be given to any cumulative impacts that concurrent operation could cause on the Severn Estuary European Marine Site. The cumulative impacts arising from concurrent operation of any of these drought permit/order options are unlikely to be different to the impact of the River Severn at Trimpley option operating in isolation given the negligible impact of the groundwater, Leam and Avon options on river flows to the estuary. However, further investigations are underway as part of the preparation of the EAR for the River Severn at Trimpley.

- River Severn at Trimpley with River Wye at Wyelands

    - The cumulative operation of these two drought options has been assessed in the HRA screening report as potentially having likely significant effects on the Severn Estuary European Marine Site. This will be further assessed as part of the environmental investigations into both of these options which will be presented in Environmental Assessment Reports.

- Norton C & D Boreholes with Beechtree Lane Borehole

    - The potential for cumulative adverse impacts from operating these borehole sources simultaneously is largely precluded as the sources are linked to the same abstraction licence conditions, which place a cumulative abstraction limit of 1215 Ml over a 5 year time span. Concurrent utilisation of these two stood down sources within the abstraction licence limit has the potential to lead to greater pressure on groundwater levels and minor cumulative adverse impacts. This assessment reflects the location of these boreholes within an over-abstracted groundwater management unit[29].

- Norton C & D Boreholes or Beechtree Lane Borehole with River Severn at Trimpley and/or River Wye at Wyelands

    - The two borehole options could potentially support the operation of the Elan Valley reservoir supply thus in part mitigating the impacts on river and reservoir levels of the River Severn at Trimpley drought permit/order and the River Wye at Wyelands drought order options

[29] Environment Agency (2013) *Worcestershire Middle Severn CAMS*.

Figure 5.2 Cumulative impacts matrix: supply management measures

	Norton C & D Boreholes	Beechtree Lane Boreholes	Derwent Valley Reservoirs	River Derwent at Ambergate	Tittesworth Reservoir and River Churnet	River Leam at Leamington &River Avon at Stareton	River Severn at Trimpley	River Wye at Wyelands	Abbey Green Borehole	Siskin Drive	Rothley Brook
Norton C & D Boreholes	N/A										
Beechtree Lane Boreholes		N/A									
Derwent Valley Reservoirs			N/A								
River Derwent at Ambergate				N/A							
Tittesworth Reservoir and River Churnet					N/A						
River Leam at Leamington & River Avon at Stareton[30]						N/A					
River Severn at Trimpley							N/A				
River Wye at Wyelands								N/A			
Abbey Green Borehole									N/A		
Siskin Drive										N/A	
Rothley Brook											N/A

KEY

	Mutually exclusive options, i.e. conflict would arise if operated simultaneously
	Potential beneficial effects if operated
	Potential adverse effects if operated simultaneously
	No cumulative effects

30 River Leam at Leamington and River Avon at Stareton would operate as one drought permit hence they have been assessed jointly for cumulative impacts with other DP options.

5.4 CUMULATIVE IMPACTS BETWEEN SUPPLY SIDE OPTIONS: CONCLUSIONS

The cumulative impact assessment in Section 5.4 highlights several supply-side options where careful consideration of the sequencing and implementation of options is required. This should inform decision-making in a drought, with options being implemented first that have the least opportunity for major adverse cumulative impacts wherever possible. However, other factors may preclude such sequencing, including the spatial distribution of drought impacts between the different Water Resource Zones, the intensity of the drought, practicability and possible drinking water quality risks.

5.5 ENVIRONMENT AGENCY DROUGHT PLANS

Assessment of the potential for cumulative impacts of supply side and drought permit/order options with drought options listed in the Draft Environment Agency Midlands DP 2012[31] has been undertaken.

The information used to carry out these assessments is considered to be the most up to date information available at time of writing, but the assessments should be reviewed at the time of actual drought option implementation to ensure that no changes to the Environment Agency DP have been made in the intervening period, and that the assessment therefore remains valid.

Drought actions and triggers are given in the Environment Agency's DP. Actions described include communications (internal and external), monitoring and potential drought order applications to protect the environment. Of these actions, those which are applicable for cumulative assessment with Severn Trent Water's drought options are external communications and potential environmental drought orders.

External communications will have positive cumulative effects with Severn Trent Water's media/water efficiency campaign demand side option, as drought communication messages may reinforce each other, thereby resulting in increased demand savings and greater recognition by the public to use water wisely.

The Midlands DP states that the Environment Agency may in an exceptional drought situation apply to the Secretary of State for an environmental drought order on the River Severn to protect the freshwater flow in the river. The Environment Agency is currently investigating the potential for "in-combination" effects as part of the River Severn Drought Order report investigations.

31 Environment Agency 2012. *Midlands Drought Plan*. Version 1. January 2012.

The Severn Trent Water River Severn at Trimpley drought order option would seek to reverse the conditions of the drought order on the Severn Trent abstraction at Trimpley WTW. The River Severn at Trimpley drought order would need to demonstrate that it is in the over-riding public interest (OPI). If this scenario arises Severn Trent Water will provide supporting evidence to demonstrate that continued abstraction to provide public water supply is even more important than the ecology that may experience short term harm.

Severn Trent Water supports the reforming of the River Severn Drought Management Group, and agreed in February 2013 with the Environment Agency and South Staffordshire Water to join this group when it reforms. The group is expected to reform after the Environment Agency has concluded its River Severn Drought Order in October 2013. This group should work to determine drought operating agreements with the Canal and River Trust (formerly British Waterways) which are also acceptable to Natural England, Natural Resources Wales (incorporating the former Countryside Council for Wales) and others with abstractions on the River Severn. This group will also aim to facilitate appropriate management of available water in the Severn catchment during drought conditions.

5.6 OTHER WATER COMPANY DROUGHT PLANS

Assessment of the potential for cumulative impacts with drought options listed in neighbouring water companies' DPs has been undertaken.

It should be noted that not all DPs are necessarily reviewed on the same timescales as Severn Trent Water's DP. The information used to carry out these assessments is considered to be the most up to date information at available at time of writing, but the assessments should be reviewed at the time of drought option implementation to ensure that no changes to the neighbouring water company drought option has been made in the intervening period, and that the assessment, therefore, remains valid.

For all of the companies discussed below, external customer communication measures included in the drought plans will likely have positive cumulative effects with Severn Trent Water's media/water efficiency campaign and other demand side options in the event that drought plans are implemented at the same time. Drought communication messages may reinforce each other, thereby resulting in increased demand savings and greater recognition by the public to use water wisely. If drought plans are implemented at the same time by other neighbouring companies, consideration could be given to joint water efficiency messages as occurred between various water companies in the south-east of England during the spring 2012 drought.

South Staffordshire Water

The South Staffordshire Water (SSW) draft 2012 DP contains two drought permit options relating to abstraction at their Hampton Loade WTW. The first drought permit would enable maintenance of an abstraction of 192 Ml/d at Hampton Loade during the operation of an Environment Agency drought order. The second drought permit would increase abstraction from 192 Ml/d to 245 Ml/d during maximum regulation conditions on the River Severn. A risk assessment[32] of the simultaneous operation of this later drought permit and the Severn Trent Water River Severn at Trimpley drought permit indicated that cumulative impacts are likely to occur. These include significant impacts on fish and recreation (angling) in the upper Severn Estuary, part of the Severn Estuary European Marine Site, due to exacerbation of water quality problems (dissolved oxygen sags, turbidity, and saline intrusion) associated with low flows at spring tides. Navigation and abstraction issues in the Gloucester and Sharpness Canal are also likely. Mitigation measures identified included variation of abstraction with the tidal cycle.

However, SSW has now decided not to apply for a drought permit at Hampton Loade. The Company may however still seek to apply for a drought order in the scenario that the EA has implemented its River Severn Drought Order. Further discussions through the River Severn Drought Management Group are required during 2013 to understand the potential in-combination options to be investigated. Severn Trent Water are committed to working collaboratively with South Staffordshire Water, the Environment Agency and other interested parties in order to facilitate appropriate management of available water during drought conditions.

United Utilities Water PLC

The United Utilities Water PLC Draft 2012 DP contains a drought permit option to reduce compensation flow to the River Vyrnwy from Lake Vyrnwy from 45 to 25 Ml/d. Releases from Lake Vyrnwy are used to help regulate the River Severn.

An Environmental Report has been prepared for United Utilities's Lake Vyrnwy drought option[33] and concluded that the hydrological influence of the drought option extends to Llanymynech gauging station on the Afon Vyrnwy (i.e. upstream of the confluence of the Afon Vyrnwy with the River Severn and 200 km upstream from the Severn Estuary SAC). None of Severn Trent's drought options have been identified to affect the areas within the hydrological zone of influence of the Vyrnwy drought

[32] SSW (2012) Hampton Loade DP/DO Environmental Assessment Report Update.

[33] United Utilities (2010) Environmental Assessment of the Impact of a potential drought permit in the Vyrnwy Reservoir system. Prepared by APEM and Hyder Consulting.

option, and therefore no in-combination impacts of Severn Trent's drought options with UU's drought option at Vyrnwy have been identified, including the Severn Estuary European Marine Site.

Dwr Cymru Welsh Water

Dwr Cymru Welsh Water (DCWW) are yet to publish their final DP however Severn Trent Water is committed to working collaboratively with DCWW on the environmental monitoring, reporting and mitigation associated with any potential DCWW River Wye drought orders.

The existing Severn Trent Water abstraction licence has been assessed under the Review of Consents process to have an adverse effect on the integrity of the River Wye SAC. Consequently, a drought order to enable abstraction to continue at flows below the normal prescribed flow is equally likely to have likely significant effects on the SAC downstream of the abstraction point. An Appropriate Assessment would therefore be required of this drought order to further understand the potential effects, including in-combination effects with any DCWW drought orders.

A range of investigations are currently underway to examine the effects of public water supply abstraction on the River Wye and the implications of the licence changes being implemented under the Review of Consents process. An Appropriate Assessment may be required once existing investigations and Review of Consents abstraction licence changes has been concluded. Additionally, the need for a drought permit will be reviewed following completion of the Severn Trent Water WRMP in 2014. For these reasons, a new Environmental Assessment Report is planned for completion by December 2014, followed by an Appropriate Assessment if this continues to conclude likely significant effects on the River Wye SAC or the Severn Estuary European Marine Site.

The HRA screening report has concluded there are no likely significant effects on other European sites within the zone of influence of these drought orders, including the Wye Valley Woodlands SAC, the Wye Valley and Forest of Dean bat sites SAC, Elenydd-Mallaen SPA, Ellenydd SAC, Elan Valley Woodlands SAC.

Severn Trent Water provides a bulk supply to DCWW from its river Wye abstraction and treatment works and is in discussions with DCWW as to how this arrangement would be managed during a drought.

Anglian Water Services Limited

No cumulative impacts between drought options in the Anglian Water Services Draft DP 2012 have been identified. A bulk supply agreement with Anglian Water (the

'Wing one' agreement) provides small amounts of water (18 Ml/d) to rural Rutland. This supply does not automatically vary with any drought management measures, and the agreement does not stipulate that Severn Trent Water will reflect any drought management measures that Anglian Water have to impose on its customers that are fed from their Wing WTW system. Nevertheless, in such circumstances, Severn Trent Water will liaise closely with Anglian Water to minimise the impact on customers whilst supporting Anglian Water's efforts to maintain supplies from the Wing WTW system.

Bristol Water PLC

No cumulative impacts between drought options in the Bristol Water Draft DP 2012 have been identified.

Bristol Water does receive raw water supplies from the Canal and River Trust from the River Severn at Gloucester via the Gloucester and Sharpness Canal with a maximum average abstraction of 210 Ml/d under normal operating conditions, with a 15 Ml/d reduction at times of high tide. There are no plans to alter this abstraction during a drought and the impact of this abstraction is already accounted for in the measured flow records used as the baseline for drought permit assessment, in the same way as other licensed abstractions are also taken into account in environmental assessment. Severn Trent Water will however liaise with the Canal and River Trust as part of its work to update the Environmental Assessment Report for the River Severn drought permit/order at Trimpley and as part of wider discussions on drought management activities through the River Severn Drought Management Group.

Yorkshire Water Services Limited

No cumulative impacts between drought options in the Yorkshire Water Services Draft DP 2012 have been identified.

The Yorkshire Water drought plan includes over 40 drought permit options for water sources within river catchments draining to the Humber Estuary European Marine Site. The HRA of the Yorkshire Water draft drought plan 2011 concluded that there would be no cumulative, in-combination likely significant effects on the Humber Estuary European Marine Site. The cumulative impacts of the Severn Trent Water drought permit on the Humber Estuary European Marine Site have been assessed in the HRA screening report as having negligible impact on flows to the Humber Estuary. Consequently, the overall in-combination impact of the Severn Trent Water and Yorkshire Water drought plans is assessed as having no likely significant impact on the Humber Estuary European Marine Site.

In 1989, Severn Trent Water and Yorkshire Water entered into an agreement for the

supply to Yorkshire Water of untreated water from the Derwent Valley reservoirs. The amount that can be taken by both Yorkshire Water and Severn Trent Water is set in operating guidelines However, there is provision in the agreement to modify these rules and this occurred during the droughts of 1995-96 and in 2003.

In the event of serious drought in Severn Trent Water's region, such as that in 2011-2012, Yorkshire Water could assist by taking a reduced supply from the Derwent Valley reservoirs. The response from Yorkshire Water will depend upon the prevailing water resource situation in Yorkshire. This could potentially delay the implementation of the Derwent Valley Reservoir (Ladybower Reservoir) drought permit option.

Wessex Water

Wessex Water has one option in its Draft Drought Plan 2012 with the potential to impact on the Severn Estuary European Marine Site: additional abstraction from the Bridgwater and Taunton Canal, with the potential to reduce flows to the River Parrett (which discharges to the southern end of the Severn Estuary European Marine Site at Bridgwater Bay). Assessment of this option by Wessex Water in their Draft Drought Plan is that there would be no likely significant effects on the Severn Estuary European Marine Site. Given the small scale of the potential impact, it is concluded that cumulative, in-combination impacts with the Severn Trent Water drought plan would be negligible with no likely significant effects on the European Marine Site.

Thames Water Utilities Limited

No cumulative impacts between drought options in the Thames Water Utilities Limited Draft DP 2012 have been identified.

Dee Valley Water

No cumulative impacts between drought options in the Dee Valley Water Draft DP 2006 have been identified.

5.7 CANAL AND RIVER TRUST DROUGHT PLANS

The Canal and River Trust (formerly British Waterways) is currently in the process of updating its internal DP. Their previous DP has not been published, but discussions regarding abstraction management during times of drought are on-going with the Canal and River Trust and these will continue in the future via forums such as the River Severn Drought Management Group (see Section 5.5) and the Rivers Usk and Wye Abstraction Management Group.

5.8 CUMULATIVE EFFECTS WITH OTHER PLANS AND POLICIES

No cumulative effects are identified with other relevant existing plans and policies, including national policy statements, national or regional infrastructure plans or with local planning authority plans. Cumulative effects with water company Water Resource Management Plans (WRMP) are discussed below.

Severn Trent Water Draft WRMP 2013

The 2013 Severn Trent Water Draft Water Resource Management Plan (dWRMP) contains several options which have the potential for cumulative impact, or which are mutually exclusive with DP options. These interactions will need to be further reviewed once public consultation on both plans has been concluded and any amendments to the plans are made, but currently they include the following interactions:

- The demand management measures proposed in the dWRMP (water efficiency, metering and leakage control measures) would, if implemented, be complementary with the Draft Drought Plan.

- The dWRMP schemes relying on Derwent Valley Reservoir releases to compensate for effects on flows on the River Derwent would interact with the Derwent Valley Reservoirs (Ladybower Reservoir) and River Derwent at Ambergate DP options. If these schemes were implemented, these schemes would influence the potential impact of the drought plan on the Humber estuary.

- The dWRMP contains an aquifer recharge scheme utilising the Norton C & D boreholes to recharge the aquifer with water from Trimpley WTW during periods of high river flows. This scheme would be mutually exclusive to the DP Norton C & D Boreholes option as they both rely on the same licence, which places abstraction limits of 1215Ml over a 5 year period.

- The dWRMP includes an option for expansion of Draycote Reservoir. This will interact with the River Leam at Leamington, River Avon at Stareton DP option and the Siskin Drive option which assist with the refill of Draycote Reservoir. If implemented, the larger capacity of the reservoir would potentially enable a delay in implementation of the drought options.

- The dWRMP contains a scheme to enable conjunctive use of groundwater abstracted from boreholes south of Trimpley WTW with the River Severn. If implemented, this would reduce pressure on flows in the River Severn during dry conditions and allowing groundwater recharge in wetter conditions when

flows in the Severn are higher. Therefore, the scheme would probably have some ameliorating effects on the adverse effects on river flow associated with the River Severn at Trimpley drought options.

It should be noted that none of the above options are likely to be implemented before 2020 at least. The DP will therefore be reviewed and updated once again before these schemes are developed.

Other Water Company WRMPs

Neighbouring water companies are also developing their updated WRMPs which will be published for consultation in spring 2013. Existing published WRMPs have not identified any schemes that may be developed during the life of the updated Severn Trent Water drought plan that would lead to cumulative impacts. Once the updated WRMPs are published, this will need to be reviewed.

6 MITIGATION AND MONITORING

6.1 OVERVIEW

Key stages of the SEA process comprise Task B5: *Mitigating adverse effects*, Task B6: *Proposing measures to monitor the environmental effects of plan or programme implementation* and Stage E: *Monitoring the significant effects of the plan or programme on the environment* (see Section 1.6, **Table 1.5**). The sections below describe how these tasks have been addressed and how Severn Trent Water intend to ensure that mitigation measures are implemented for any adverse effects that are identified and the means by which the environmental performance of the DP can be assessed.

6.2 MITIGATION

Consideration of mitigation measures has been an integral part of the SEA process. The SEA appraisals have been based on residual impacts, i.e. those impacts likely to remain after the implementation of reasonable mitigation. Certain assumptions have been made regarding this:

- Where suitable mitigation measures are known and identified (e.g. as informed through the Environmental Assessment Reports and the Severn Trent Water DP Section 4.3 and appendices), these have been taken into account, such that the resultant residual impact has been determined.
- In line with recommendations made in the UKWIR SEA Guidance[34], the SEA appraisals have assumed the implementation of reasonable mitigation, such as the use of good construction practice. This is particularly applicable to stood down supply-side options which are currently non-commissioned and which do not operate as 'business as usual', and would require re-commissioning in the event of use as a drought option.
- Mitigation is an implicit component of more recently issued or varied abstraction licences which are based on an assessment of the potential impacts on the environment.

6.3 MONITORING

Monitoring is required to track the environmental effects to show whether they are as predicted, to help identify any adverse impacts and trigger deployment of mitigation

[34] UKWIR (2012) *Strategic Environmental Assessment and Habitats Regulations Assessment of Drought Plans*. Prepared by Cascade Consulting.

measures.

DPs encompass a basket of measures that will only be implemented if and when required dependent on how a drought develops and intensifies. Thus the actual impact of the plan over its life is subject to very significant uncertainties.

Severn Trent Water's DP includes a range of possible measures to allow Severn Trent Water to respond to a particular drought in the most appropriate way. Correspondingly, it is therefore difficult to prescribe precise monitoring for the effects of the DP as a whole, and more appropriate to consider specific monitoring for drought options with significant environmental effects should these options be implemented during an actual drought.

As described in Section 1.5, Environmental Assessment Reports (EARs) were prepared in 2012 for the Derwent Valley Reservoirs (Ladybower Reservoir) drought permit and River Derwent at Ambergate drought permit. Draft Environmental Assessment Reports have been prepared for the Tittesworth Reservoir and River Churnet drought permit and the River Leam at Leamington and the River Avon at Stareton drought permit. These reports include an Environmental Monitoring Plan (EMP) which specifies the requirements for environmental monitoring in drought condition. The EMP sets out the monitoring required during a drought in advance of, during and post implementation of each drought permit/order option. In this way, the impact of any drought option implementation can be compared to the baseline drought conditions to assess the additional impact that the option has on the environment. It also ensures that assessment is carried out into the extent to which the environment is able to recover once the option ceases to be used. The findings from the monitoring can therefore feed into subsequent reviews and updates to the DP.

In addition to the EMP, the Environmental Assessment Reports have highlighted some environmental issues where the assessment of impact is uncertain due to data or information gaps. The reports recommend a periodic gap analysis to in order to capture data collected by the EA and third parties and that the Environmental Report is periodically revised with any updated information. Recommendations are included in the reports for additional baseline environmental monitoring to reduce uncertainty of impact assessment.

Preparation of EARs for the drought permit/order and the Wyelands drought order are currently on-going and these reports are expected to be completed in 2013 and 2014 respectively. Once completed, these EARs will include an EMP for the River Severn and River Wye drought permit/order sites. Currently, annual monitoring plans for these drought permit/order locations describe the baseline monitoring being carried out to support the DP.

Commencement of monitoring in drought conditions in advance of seeking to implement DP options can be linked to the drought trigger control lines in the Severn Trent Water DP, ensuring that monitoring commences sufficiently early to provide a "natural drought" baseline but equally is not implemented too soon such that monitoring effort becomes abortive (with consequent abortive costs) and/or is instigated on a frequent basis. In practice, close dialogue should occur between Severn Trent Water, Environment Agency, Natural Resources Wales and Natural England once drought triggers are approaching to agree whether and where to commence monitoring activities, taking account of prevailing environmental, weather and water resources conditions and outlook/prospects over the coming months.

7 SUMMARY

Assessment of Drought Options

Demand side options

Demand-side options serve to reduce pressure on water resources by reducing customer demand for water, and therefore reducing the need for supply-side options to abstract more water from the environment. Mixed or adverse effects of demand-side options have been identified with respect to population and human health and the value of water to the local economy where restrictions of water use are involved. These adverse effects increase in significance as more water uses become prohibited.

The SEA assessment of the demand-side option supports the proposed ordering and sequencing of implementation of these options relative to supply-side options set out in the Draft Drought Plan.

Supply-side options

All of Severn Trent Water's supply-side options are based on abstracting more water from existing licensed water sources. Five of these options involve operation within existing abstraction licence conditions, but the remainder would require an application to be made for a drought permit or drought order to authorise additional abstraction. No construction works are required to make use of these options, except for the possible need to carry out minor refurbishment works associated with some of the groundwater source options.

Operationally, the supply-side options are assessed as having a wide range of potential impacts, from major adverse effects on biodiversity, flora and fauna for some options to major beneficial effects for water resource reliability and resilience. The SEA assessment indicates those supply-side options with a lower level of impact that should be considered for implementation in the first stages of a developing drought. Options with a greater impact could be implemented later if the drought intensifies. However, selection of the appropriate option for implementation during a drought will also depend on a range of other factors: the amount of water made available; how effectively this water can be utilised; the spatial distribution of drought impact; prevailing environmental conditions and the time of year.

The SEA assessment highlights that most of the supply-side options considered for inclusion in the Draft Drought Plan would have no greater than minor adverse effects on the SEA topics. The licensed, but "stood down" water source options (Norton boreholes, Beechtree Lane borehole, Abbey Green borehole, Siskin Drive and Rothley Brook) have the least environmental impact, followed by the drought permit options for Tittesworth Reservoir and the River Churnet, River Leam at Leamington and the

River Avon at Stareton. Drought permit options for the Derwent Valley Reservoirs and the River Derwent at Ambergate are assessed as having a slightly greater, but minor, adverse effects.

By contrast, the remaining two supply-side options have the potential for greater adverse environmental effects. The proposed drought permit and drought order options for the River Severn at Trimpley would authorise additional abstraction during times of low flow and river regulation, leading to lower river flows downstream with moderate adverse effects for water quality and aquatic ecology. The lower river flows resulting from the drought permit or order also have the potential to impact on the internationally important environment of the Severn Estuary which is designated as a Special Area of Conservation, Special Protection Area and a Ramsar site. However, work carried out to date indicates that even with the drought permit or drought order in place, flows in the River Severn downstream of Trimpley during drought conditions may still be higher than would naturally have been expected due to the benefit of the River Severn flow regulation scheme. Consequently, significant adverse effects on the Severn Estuary are considered unlikely, but given the international environmental importance of the estuary, Severn Trent Water is currently carrying out more detailed investigations to confirm this provisional assessment. The findings of these investigations will be presented in an updated Environmental Assessment Report which is due to be completed by autumn 2013.

The drought order option for the River Wye at Wyelands in the Draft Drought Plan is likely to have major adverse effects on the environment. The River Wye is designated for its important aquatic habitats and species (including salmon, lamprey and shad fish species) as a Special Area of Conservation (SAC). The Environment Agency Wales completed its review of Severn Trent Water's normal abstraction licence conditions for the River Wye at Wyelands and concluded that they may lead to adverse effects on the designated aquatic features of the River Wye SAC, particularly at times of low river flow. Consequently, a drought order to authorise greater abstraction at times of very low river flows during a drought is likely to exacerbate these impacts with adverse implications for the designated aquatic habitats and species.

The environmental implications of the River Wye drought order option have been recognised by Severn Trent Water and the company is working in partnership with Natural Resources Wales, Dŵr Cymru Welsh Water, Environment Midlands Region, Natural England and the Wye and Usk Foundation to further investigate the environmental impacts of public water supply abstractions from the River Wye. The investigations commenced in 2012 and will be continuing throughout 2013. Severn Trent Water will build on the findings of these investigations to examine the impacts of the River Wye drought order on the SAC which will be reported in an Environmental Assessment Report by December 2014.

In parallel, Severn Trent Water has produced its draft Water Resources Management Plan and is preparing its long-term Business Plan which explores the longer term supply-demand balance in the area supplied from the River Wye and options for potentially reducing the risk of requiring a drought order in the medium to longer term.

Decisions on supply-side options to maintain essential water supplies in drought conditions also need to take account of the cumulative assessment of impacts. Greater environmental effects may arise when some of these options are operated in combination with other supply-side options or with programmes or plans of other organisations, particularly other water companies and the Environment Agency.

Cumulative Impact Assessment: Demand-Side Options

No adverse cumulative impacts are expected from implementation of one or more demand-side options. The demand-side options are complementary with potential beneficial impacts if implemented together. Cumulative beneficial effects with other water company and Environment Agency drought plans may occur if drought conditions were to arise at the same time and water efficiency campaigns are co-ordinated to maximise the water saving benefits. Demand management measures proposed in the Severn Trent Water draft Water Resources Management Plan 2013 would also be complementary with the Draft Drought Plan. No other cumulative impacts with other programmes or plans were identified.

Cumulative Impact Assessment: Supply-Side Options

Cumulative impacts were assessed as no greater than minor adverse for most combination of options. For those options within the River Trent basin (Tittesworth Reservoir and the River Churnet, Derwent Valley Reservoirs and the River Derwent at Ambergate), the potential cumulative impacts of simultaneous operation on the Humber Estuary were assessed given its designation as a Special Area of Conservation, Special Protection Area and a Ramsar site. The assessment concluded that, given the scale of the additional abstraction and the distance upstream from the estuary, there would be negligible cumulative impact on this internationally important site.

For those options within the River Severn basin (groundwater options, River Leam at Leamington, River Avon at Stareton, River Severn at Trimpley), potential cumulative impacts of simultaneous operation on the Severn Estuary designated sites were assessed. The assessment concluded that it was unlikely that impacts on the estuary would be different to the impact of the River Severn at Trimpley option operating in isolation given the negligible impact of the groundwater, Leam and Avon options on river flows to the estuary. However, further investigations are underway as part of the preparation of the EAR for the River Severn at Trimpley.

Cumulative operation of the River Severn at Trimpley and River Wye at Wyelands was assessed as potentially having likely significant effects on the Severn Estuary European Marine Site. This will be further assessed as part of the environmental investigations into both of these options.

Given the location of Severn Trent Water's supply area and its water resources, cumulative impact assessment with other water company and Environment Agency drought plans is particularly important. Cumulative impacts were assessed in relation to the drought plans of United Utilities Water, Yorkshire Water, South Staffordshire Water, Dŵr Cymru Welsh Water, Bristol Water, Wessex Water, Anglian Water, Dee Valley Water, Environment Agency Wales and the Environment Agency Midlands and North West regions. In the majority of cases, cumulative impacts with these plans were assessed as no greater than minor adverse. However, moderate to major adverse cumulative impacts were identified with drought permit and order options contained within the existing drought plans of South Staffordshire Water and the Environment Agency Midlands region due to potential adverse effects on the Severn Estuary designated sites, and with the existing Dŵr Cymru Welsh Water drought plan due to adverse effects on the River Wye SAC.

Cumulative impacts were also assessed with Severn Trent Water's draft Water Resource Management Plan 2013. There is the potential for some minor adverse cumulative effects in relation to the River Derwent drought options if proposed water resource schemes were implemented in the longer term (beyond 2025). Other proposed schemes for the longer term would either be mutually exclusive to drought options or have the potential to reduce the need for drought options.

No other cumulative impacts with other programmes or plans were identified.

Mitigation and Monitoring

Consideration of mitigation measures has been an integral part of the SEA process. The SEA appraisals have been based on residual impacts that are likely to remain after the implementation of reasonable mitigation.

During implementation of one or more drought options, appropriate monitoring will be undertaken to track any potential environmental effects which will in turn trigger deployment of suitable and practicable mitigation measures. Prior to implementation, Severn Trent Water will review the specific requirements for environmental monitoring in consultation with the Environment Agency, Natural England and Natural Resources Wales.

Next Steps

This SEA Environmental Report is being issued for public consultation. Once comments have been received through this consultation, the SEA will be used to support Severn Trent Water in producing its Final Drought Plan that will be published in due course following approval from the Secretary of State and Welsh Government.

When the drought plan is implemented during an actual drought event, Severn Trent Water will use the SEA to support decisions on option implementation. The company will also monitor the effects of any options implemented on the environment, helping to ensure that the potential impacts identified in the SEA are considered in practice.

APPENDICES

APPENDIX A

RESPONSE TO SEA SCOPING REPORT CONSULTATION FEEDBACK

The Scoping Report was issued to the public and the statutory consultees (Environment Agency, Natural England, English Heritage, Environment Agency Wales, Countryside Council for Wales, Cadw and the Welsh Government) for a period from 6 November to 3 December 2012. Responses received, and actions taken as a result, are listed in the following table.

Consultee	Scoping Report Review Question	Comment No.	Comment	Response
English Heritage	**Q3. Are you aware of any further baseline data or indicators that might provide useful information?**	1	The report appears to cover the areas required under the regulations and references all the relevant documents. They would like to draw our attention to Natural England's website which includes detailed information on both the SAC and SSSI citations, conservation objectives and favourable condition tables that can be used to help assess potential impacts of the drought plan options.	Natural England website reviewed to assess further potential impacts of the drought plan options.
	Q6 Do you have any views on the proposed approach for options and programme appraisal?	2	One query they have about the Company's drought plan process is the lack of understanding of when the Habitats Regulation Assessment (HRA) of the plan is being carried out. This document should ideally be progressed as the plans options are designed, so to inform the potential impact of options on European Sites and ensure these are considered at the earliest stage of the plan progression. It would be useful if the company could give Natural England a clear timetable for the production of the HRA	HRA reviewed and a draft issued to Natural England
Consultee	**Scoping Report Review Question**	**Comment No.**	**Comment**	**Response**
Gloucestershire County Council	Q1. Are the plans and programmes that have been reviewed appropriate	1	Seems to be the case but see Q.2 below	Noted
	Q2. Are you aware of other plans or programmes that should be considered?	2	AONB Management Plans are referenced in Appendix A but not it appears in Table 3.1. The Wye Valley, Malvern Hills and Cotswolds plans can be found at: http://www.wyevalleyaonb.org.uk/index.php/about-us/management-and-guidance/management-plan-2009-2014/ , http://www.malvernhillsaonb.org.uk/management_plan.html and http://www.cotswoldsaonb.org.uk/?page=management-plan-review .	Table 3.1 amended
		3	'Complete omissions are ASERAs Severn Estuary Management Scheme which can be seen at	These plans have been added to the list considered.

Consultee	Scoping Report Review Question	Comment No.	Comment	Response
			http://www.severnestuary.net/asera/management.html and the Strategy for the Severn Estuary at http://www.severnestuary.net/sep/publications/severn.html .	
	Q3. Are you aware of any further baseline data or indicators that might provide useful information?	4	Figure 2.2 on page 19 and probably Figure 4.2 on page 37 They don't seem to identify the following SAC sites in Gloucestershire – Cotswolds Beechwoods, Rodborough Common, Forest of Dean and Wye Valley Bat Sites, Wye Valley Woodlands and River Wye. Additionally the SPA/Ramsar status of Walmore Common and SAC status of Dixton Wood are unclear but this is possibly due to the small size of these sites compared to the scale in which the maps have been drawn. Just outside of Gloucestershire and the STW area is North Meadow & Clattinger Farm SAC which is not identified as a European Site. We can see however that the underlying SSSIs, and where designated NNRs, are shown correctly for these European Sites. Section 4.2 on page 36 Quotes 24 SACs, 3 SPAs and 5 Ramsar sites and these figures need checking to see if the above sites have been counted in if STW deemed them relevant. In saying all this we note that Table 4.1 does list the Cotswolds Beechwoods SAC, Dixton Wood SAC, River Wye SAC but not the other sites highlighted above.	We note that smaller SAC and SPA sites were not displaying correctly at the scale at which the map was printed, this issue has now been rectified so they are visible. The scale of the map and the size of the smaller sites does mean however that it will still be hard to distinguish between types of designation. We can confirm that all these sites were included in the tally. Table 4.1 has a focus on water dependent sites, hence some of the sites mentioned were not included in that particular listing as they did not have water dependent designations.
		5	Pages 20 and 40 Make reference to Biodiversity Action Plan (BAP) interest features and is out of date (for England at least). The phrase should be replaced with Priority Habitats and Species as identified on the English and Welsh Lists (S.41 NERC Act). Local Biodiversity Action Plans (LBAPs) are not formally recognised in England by Defra's Biodiversity 2020 Strategy. There is a UK BAP but for England this only informs the features given priority on the English List. Table 5.1 on page 101 seems to be aware of the new approach.	Phrase replaced with recommended language as used within Table 5.1
		6	Appendix A	Gloucestershire LBAP removed from the list within

Consultee	Scoping Report Review Question	Comment No.	Comment	Response
			Lists Local Biodiversity Action Plans so please note that there is no LBAP for Gloucestershire but instead quote the new spatial/strategic approach which is 'Gloucestershire Biodiversity Framework 2010' which can be found at http://www.gloucestershirebap.org.uk/actionplan/index.php . LBAPs and Frameworks do not seems to appear summarised in Table 3.1. There is no reference in the SEA Report of Local Wildlife Sites where most priority biodiversity features occur so this needs some consideration if not already. You can find further information on the Gloucestershire Local Wildlife Sites (which are called Key Wildlife Sites) at http://www.gloucestershirewildlifetrust.co.uk/what-we-do/local-nature-conservation/conservation-areas/key-wildlife-sites . The State of the Severn Estuary Report may also have some relevant to the SEA and can be found at http://www.severnestuary.net/sep/publications/soser.html .	Appendix A and replaced with 'Gloucestershire Biodiversity Framework 2010' State of the Severn Estuary Report also reviewed and added to the list of PPPs contained within Appendix A
	Q4. Are the environmental Issues identified for YWSs Water Resources Plan appropriate?	7	Yes under the topic of 'Biodiversity, flora and fauna'.	Noted – no further action required
	Q5. Do the environmental objectives encompass all the necessary issues?	8	Yes under the topic of 'Biodiversity, flora and fauna'.	Noted – no further action required
	Q6 Do you agree with the overall scope and approach proposed in the scoping report?	9	No observations.	Noted – no further action required
Consultee	**Section in Draft Report**	**Page Number**	**Comment**	
Environment Agency (Midlands region and Wales)	2.3.1 Overview	15	Insert 'draft' – SvT's 'existing' drought plan was approved in 2009 (written in 2007) – assume this needs to say SvT's 'draft' drought plan rather than existing (references to experiences from 2010 and 2011 events suggest the section title is correct, just alter wording for clarity).	Wording altered (existing changed to 'draft') as suggested for clarity
	2.3.2	16	Could the order of supply and demand side options be switched? Not crucial, but currently could be interpreted as the supply side options (including drought permits) as being the	Order of supply and demand side options switched

Consultee	Scoping Report Review Question	Comment No.	Comment	Response
			primary/1st actions to be taken, where as demand side water efficiency drives/appeals are an expected primary response. The Environment Agency would obviously encourage public appeals, and drought permits would not be considered unless evidence that all alternatives (e.g. TUB) had been exhausted first.	
	Table 2.1	16	Surprised to see mothballed sources still as an option. Feedback from SvT from recent drought and experience is that it would take too long to re-commission a source to have it as a valid drought option? Beachtree and Norton are existing licensed sources which I presume are operational as they have recently been test pumped so are not really classed as 'mothballed'. Need greater clarity around this option/proposed sites.	Table 2.1 altered to clarify Beechtree and Norton options are those under consideration
	Table 2.3	17	Not sure it really makes any difference but Derwent Valley and Ambergate would be one permit and so would the Leam and Avon.	We note that these will form one drought permit but feel that as the impacts on the two rivers from the two sections of the permit will be different, they should be the focus of separate assessments. We acknowledge that these impacts will be concurrent, and this will inform the assessment.
	Table 2.3 and 2.2	17	Numbering of tables need swapping? Currently 2.3 comes before 2.2.	Corrected
	Table 2.2	18	Under Drought for non essential use ban may be appropriate to in include relevant text next to 'drought control line' as there are a few.	Wording altered
	Figure 2.2	19	Could the Drought Plan Options be made a little clearer? The yellow circles have no black outline and dwarfed by the RAMSAR etc sites, maybe change colour, strengthen outline etc?	The drought plan option dots have been given a border
	Table 2.4	21	According to the table the Tittesworth Res & Churnet Report and the Leam & Avon reports were completed in 2012. Neither report has been fully completed yet. For Tittesworth, the results of STW's water quality test in November 2012 on Abbey Green borehole need to be taken into account and the report revised in light of the results. The Leam & Avon report appendices were provided to the EA for comment on 5 Nov 2012, we will respond by 12 Dec (workloads are such that we can't respond sooner). The main report hasn't been sent to us yet. Presumably the completed versions will be used to inform the SEA?	The most up to date version of the reports has been used to inform the SEA
	Table 2.4	21	Query the full meaning of 'collaborative working' with the Environment Agency? E.g. Trimpley – not yet aware of collaborative work, EA Midlands are producing their River Severn Drought Order Environmental Report which includes some cumulative (in-combination) assessment , we have consulted STWL throughout, but unaware of any specific Trimpley collaborative work?	Severn Trent Water have met with the EA and other stakeholders in recent months as part of collaborative work to pool resources in order to assess

Consultee	Scoping Report Review Question	Comment No.	Comment	Response
				the 'in combination' impacts of drought permits
	Section 3.2 – Review of Policies, Plans and Programmes	22 – 23	We note that plans and programmes are listed under specific SEA Topic Areas. Whilst we have no concerns with this approach, certain plans and programmes may be relevant for more than one Topic Area. For example, in Wales, Planning Policy Wales will be relevant for most Topic Areas. As currently drafted, this does not seem to be consistently recognised in Table 3.1. We therefore recommend that the supporting text should clarify that whilst certain plans and programmes may only be listed under a certain Topic Area, they may also be relevant for other Topic Areas.	Caveat added to section 3.2 clarifying that whilst certain plans and programmes may only be listed under a certain Topic Area, they may also be relevant for other Topic Areas.
	Table 3.1 – Key Policy Messages derived from the Review of Plan and Programmes	24 – 32	Since the publication of the SEA Scoping Report a new version of Planning Policy Wales (PPW) has been published. The SEA should therefore refer to Edition 5 (November 2012) of PPW. We recommend that the following plans and programmes should also be considered as part of the review of plans and programmes. In following the approach undertaken in the Scoping Report, we have listed the plans under a specific SEA Topic Area. However, certain plans will also be relevant for other SEA Topic Areas: SEA Topic – Biodiversity, flora and fauna - Local Biodiversity Action Plans. SEA Topic – Population and human health Relevant local development plans, and in particular: - Powys Unitary Development Plan 2001-2016 (Adopted 1st March 2010); - Powys Local Development Plan 2011 – 2026 Preferred Strategy (Consultation Draft) (March 2012) SEA Topic – Material assets and resource use - Welsh Government Technical Advice Note 21: Waste (2001). SEA Topic – Water - Environment Agency Wales Drought Plan (January 2012) Local flood authorities (local authorities in Wales) are currently preparing Local Flood Risk Management Strategies. These may not be available at the time of writing the Draft Drought plan. However Severn Trent Water should consider the relevant strategies when completed. Preliminary Flood Risk Assessments are available: http://www.environment-agency.gov.uk/research/planning/135491.aspx	References to PPW amended to make reference to PPW Edition 5 (November 2012) PPPs added to Table 3.1 as suggested
	Chapter 4 – Environmental Baseline Review Section - 4.1.1	34	We welcome the clarification that the reference to the 'Severn Trent Region' is used to describe the water supply and potential water source areas for Severn Trent Water. Our comments to the SEA Scoping report are based on this definition being used throughout the SEA.	Noted.

Consultee	Scoping Report Review Question	Comment No.	Comment	Response
	Limitations of the data and assumptions made			
	Table 4.1	38	Spelling mistakes in SAC names: Warks Avon CAMS - Bredon Hill not Breedon. Staffs Trent Valley – Mottey Meadows not Motley, Cop Mere not Cope Mere	Spelling mistakes amended.
	4.3.3 – 3rd bullet point, 2nd sentence	47	Need to insert either the word 'to' or 'for' after opportunities.	3rd bullet point reviewed and amended as suggested
	Groundwater	51	It states 35% of supplies from gw – 30% in introduction section (p11)	Amended to 30%, as reported in the draft DP
	Groundwater, second para	51	I haven't got the WRMP SEA to check against but it look to me as if the comment made on the WRMP SEA scoping applies to this SEA too, namely: The main reason for poor quantitative status in groundwater is that abstraction levels exceed the volume of base flow discharge from groundwater bodies to rivers at times of low flow, not that abstraction exceeds recharge	The comments made during the dWRMP SEA scoping consultation were reviewed prior to preparation of the DP SEA, and we can confirm that this text appears on page 51
	Fig 4.4 Water Quantity Section 4.5 – Water Table 4.4 – Resource Availability Status in the Severn Trent Water region	52	Tittesworth Reservoir isn't labelled on the figure but it is mentioned in the Surface Waters text on page 51. It would be helpful to include it on the diagram.	Tittesworth Reservoir labelled on figure 4.4
		54	Catchment Abstraction Management Strategies are due to be updated in December 2012. When available, we recommend that the updated information should be used to inform the SEA, as per our comments on the WRMP SEA scoping in August.	Latest CAMS information consulted
	4.5.1 - Paragraph on Water Quantity	54	The CAMS work seeks to identify where additional abstractions can be made from surface water and groundwater (not just rivers as it says in the paragraph)	4.5.1 Water Quality paragraph amended to clarify that CAMS seeks to identify additional abstractions from surface water and groundwater
	Table 4.4	55	Lower Trent and Erewash CAMS- WRMU 4 River Leen and the Hucknall Lower Magnesian	Table 4.4 amended as

Consultee	Scoping Report Review Question	Comment No.	Comment	Response
			Limestone- the Resource availability status is No water available and the comment should be 'The aim is to remain at 'no water available' at low flows. Future licences would be granted but would be subject to Hands Off Flow (HOF) conditions.	suggested
	Table 4.4	55	Lower Trent and Erewash CAMS- WRMU 3 Wollaton Sherwood Sandstone Group GWMU- The resource availability status is over-licensed. The comment should be 'Target to stay at 'over-licensed' with aim to move towards 'no water available' this would involve a presumption against the issue of new licences and variations to existing licences.	Table 4.4 amended as suggested
	Table 4.4	55	Idle and Torne CAMS- WRMUs 1,2 &3- Resource availability status No water available.The comment should be 'Target for these WRMUs is to remain at 'no water available' to ensure management of the WRMUs will not have an impact on the River Idle WRMU 4 which is downstream. This involves a presumption against the issue of new licences and variations to existing licences.	Table 4.4 amended as suggested
	Table 4.4	55	Idle and Torne CAMS- WRMUs 4 & 5- Resource availability status 'Over-abstracted'. The comment should be ' Target is 'over-licensed'. This will involve reductions in licensed quantities and abstractions and a presumption against new licences and encouraging existing licences to reduce licensed quantities in line with actual abstraction needs. For time limited licences there will be a presumption of renewal subject to local considerations.	Table 4.4 amended as suggested
	Table 4.4	58	Warks Avon CAMS - Avon Confined GWMU appears in the over-licensed and over-abstracted RAS. In the published CAMS it is over-licensed. Staffs Trent Valley CAMS – Lichfield does not have a 't' in it. WRMU3 Penk, new licences will be granted but they will be subject to a HoF. Dove CAMS – spelling mistake in commentary, Eddington should be Egginton	Spelling mistakes in 'Lichfield' and 'Egginton' to corrected
	Table 4.6 – Main reasons for waterbodies failing to achieve good ecological status or potential	62	It is unclear whether Table 4.6 presents the reasons for failure for waterbodies across England and Wales, or for waterbodies within the Severn Trent operational area. We consider that it would be appropriate for the SEA to present the information for the Severn Trent Water operational area. Where requested, we can provide details on the reasons for failure to achieve good ecological status/ potential for waterbodies within the Severn Trent Water operational area.	The Table does refer to all English/Welsh water bodies. This table focuses on the Severn Trent Water area, and we have updated it with data provided by the EA.
	Section 4.5.2 – Future Baseline	64	As currently drafted the first sentence of the first paragraph reads "…prevent no deterioration by 2015". We recommend this should be amended to read "prevent deterioration by 2015".	Amended as suggested
	Section 4.5.3 – Key Issues	65 - 66	We recommend that ensuring the resilience of Severn Trent Water's infrastructure against flood risk should also be identified as a Key Issue.	'ensuring the resilience of infrastructure against flood risk' added to the key issues within Section 4.5.3
	End of paragraph on soils	69	Need another e.g. - Stoke Bardolph is not an upland area.	Amended
	Table 4.11	79	Not sure I agree with the statement 'increased sediment and pollution runoff into watercourses caused by changes in farming practices'. Only speculating that farming policy/ reg would make account for this?	Table 4.11 amended as suggested

Consultee	Scoping Report Review Question	Comment No.	Comment	Response
	– Potential Impact of Climate Change on Water Resource and Demand in the Severn Trent region		We suggest that reference should be made to the risk of flooding to Severn Trent Water's infrastructure and the potential for consequential disruption to water supply, and potential pollution incidents.	
	Table 4.14 - Water	98	Suggest expanding 'The need to maintain and improve the quantity and quality of groundwater resources in the region.' to also include surface water – not sure the others cover water quality in SW ?	Surface water added
	Table 4.14 - Summary of the key sustainability issues identified for the SEA; and Table 5.1 Derivation of SEA Objectives and Indicator Questions	97 - 98; and 101 - 103	Subject to the frequent reference to 'region' being understood to include the Severn Trent Water supply area, potential source areas and areas that are hydrologically linked to the supply and source areas, we generally welcome and support the identified Key Issues, Indicator Questions and Objectives.	We can confirm this is what is meant by 'region' in this context
	Fig 5.3 Worked Example (and Table 5.1)	108 and 109	In the Biodiversity topic and the first two objectives of the Water topic there is an adverse effect noted in the significance column. However in the Water ensure reliable resources for people, economy and the environment objective the effect significance is Major beneficial, but the effect on the environment won't be beneficial surely? Wouldn't it be better to remove and the environment from the objective rather than include it with people and the economy as the effects are different?	We agree that this objective is more focused with 'the environment' removed.
	Section 5.4 – Secondary, Cumulative and Synergistic Environmental Effects	110	It would be useful for the evaluation matrix to be also supported by commentary including an explanation of the identified cumulative effects.	The ER contains discussion of any cumulative impacts identified
	EA Humber RBMP	138	In the text in the last column it refers to the Severn RBMP instead of the Humber.	Error noted and corrected
Consultee	**Section in Draft Report**	**Page Number**	**Comment**	
CCW	1.2.2		CCW notes and acknowledges the high degree of uncertainty inherent in the production of any Drought Plan. The reference to the need to maintain essential water supplies to customers is also noted however, clarification would be welcomed as to whether drought management measures also require maintenance of essential water resources to the environment and maintenance of essential ecological goods and services.	The drought planning process incorporates an environmental assessment element (SEA, HRA and environmental assessment of drought permit/orders) such that adverse impacts on the

Consultee	Scoping Report Review Question	Comment No.	Comment	Response
				environment, including those on essential ecological goods and services, are kept to a minimum.
			CCW appreciates and acknowledges the lack of predictability for the way in which drought measures may be applied, however, it is suggested that this assessment process may need to consider applications and assessment of worst case scenarios as a matter of principle.	There is a high degree of uncertainty surrounding the assessment of potential drought impacts. With this in mind, a precautionary approach is taken throughout this SEA. 'Worst case' scenarios will be considered when necessary.
	2.1		Clarification is required as to what is understood by 'essential water supplies', notably in the context of our comments on 1.2.2 above.	Essential water supplies include water supplies required to maintain public health, cooking and washing, which may be affected by emergency drought orders. This excludes supply for activities such as recreation, car washing and gardening, which can be restricted by temporary water use restrictions. More details can be found in the draft DP.
	2.2		Clarification would be welcomed regarding the amount of water supplied from sources in Wales, the nature and location of water resources and water infrastructure in Wales (including impounding reservoirs, service reservoirs, river abstractions etc should also be provided).	Details are provided in the draft DP.
			Clarification would be welcomed as to whether Severn Trent's Water Resource Zones include source areas as well as supply areas.	The Severn Trent Water WRZs refer to the areas within which customers are supplied and does not always include the source areas. However, the SEA considers the source areas supplying these WRZs. Further details on the STW water supply and source system are provided within the draft DP.

Consultee	Scoping Report Review Question	Comment No.	Comment	Response
	Figure 2.1		CCW would suggest that this Figure should include the Welsh/English border.	Figure has been amended to display the border.
	Strategic Grid		Clarification would be welcomed as to any water resources used within the Strategic Grid WRZ are derived from sources in Wales and if so, the nature and location of those water resources.	A bulk water import via the Elan Valley Aqueduct provides a large source of water to this zone. This will be reflected in the ER. The use of this source during times of drought is detailed in the draft DP.
	Whitchurch and Wem.		CCW notes that there are 'no connections with surrounding WRZs under normal operation'. However, given that this assessment relates to non-normal conditions, clarification would be welcomed as to whether it is possible for this WRZ to be connected to other WRZs in non-normal conditions (either in terms of supply and/or discharge).	These WRZ are 'groundwater only' zones and supply comes from boreholes within the zone. The draft DP sets out the operational flexibility in drought conditions.
	Kinsall		CCW notes that there are 'no connections with surrounding WRZs under normal operation'. However, given that this assessment relates to non-normal conditions, clarification would be welcomed as to whether it is possible for this WRZ to be connected to other WRZs in non-normal conditions (either in terms of supply and/or discharge).	
	Mardy		CCW notes that there are 'no connections with surrounding WRZs under normal operation'. However, given that this assessment relates to non-normal conditions, clarification would be welcomed as to whether it is possible for this WRZ to be connected to other WRZs in non-normal conditions (either in terms of supply and/or discharge).	
	Bishops Castle.		CCW notes that there are 'no connections with surrounding WRZs under normal operation'. However, given that this assessment relates to non-normal conditions, clarification would be welcomed as to whether it is possible for this WRZ to be connected to other WRZs in non-normal conditions (either in terms of supply and/or discharge).	
	Shelton.		Clarification would be welcomed regarding the nature and magnitude of water supplied to this WRZ from sources in Wales. The reference to the Shelton to Telford Main is noted and further information would be welcomed as to whether any water resources derived from Wales will be utilised within this strategic link.	The water main carries water abstracted from the River Severn in England. Severn Trent Water has an agreement with United Utilities regarding an emergency supply of water to Oswestry from Lake Vyrnwy (in Wales). Details of this agreement are provided in the draft DP.
	Wolverhampton		Clarification would be welcomed regarding the magnitude and source of water supplied to this WRZ from sources in Wales.	Abstractions providing water for this zone are within England.
	2.3.2		Clarification would be welcomed regarding the nature and location of 'reserve water sources'	The reserve water supplies

Consultee	Scoping Report Review Question	Comment No.	Comment	Response
			and further information would be welcomed as to what is meant by 'certain nonessential water uses'.	under consideration in the draft DP include Norton C & D and Beechtree Lane boreholes. These options are included in the SEA and are detailed draft DP.
	Table 2.1: Inter-company bulk imports. Recommissioning of un-used/under-used licensed water sources.		CCW notes with interest the proposals to discuss bulk transfer of water with neighbouring companies however, CCW would suggest that the reduction of pressure on STW water resources (and supply) via bulk transfer should not be considered where such bulk transfer would increase pressure and/or compromise the ecological services and function of 'neighbouring companies'. It is suggested that if drought conditions are affecting the supply area of a given WRZ for Severn Trent, it is highly likely that similar conditions will also be affecting water companies in adjacent WRZs. Clarification would be welcomed as to whether any un-used or under used water resources are located within Wales or are hydrologically linked to Wales.	The unpredictable nature of droughts means that neighbouring water companies may not be in drought when the Severn Trent Water region is experiencing drought conditions. Conversely all neighbouring companies may also be in drought. It is because of this unpredictability that STW is committed to maintaining communication with other water companies, the EA, NE and NRW when responding to drought. Further details are provided in the draft DP. See response to Comment on 2.3.2.
	Table 2.2: Introduction of temporary Use ban.		Clarification would be welcomed as to whether non-essential uses such as golf course watering and sport's ground watering will be included within this category. In addition, no reference has been made to agricultural use of water in the event of a Drought and/or whether unlicensed abstractions, including canal abstractions etc will be considered within these options and this draft Drought Plan.	Under drought conditions Severn Trent Water will have the authority to impose limits on watering of golf courses under the Water Use (Temporary Use Ban) Order (2010), however these powers do not extend to most agricultural uses. The cumulative assessment has considered the operation of other water sources by other parties such as the Canal and

Consultee	Scoping Report Review Question	Comment No.	Comment	Response
			Clarification would be welcomed regarding the definition of 'non-essential use' and whether the need to maintain ecological goods, services and functions will be considered within this draft drought plan.	River Trust. See response to comment 1.2.2 above.
	Table 2.3		CCW notes with interest the reference to a potential drought order option on the River Wye at Wyelands. Given this river's' status as an SAC and SSSI and the recent Review of Consents process for this river, CCW is surprised to see it being considered an option in regards to Drought Order Options. Although not mentioned within this report, CCW assumes that this Drought Plan (and the option for the River Wye at Wyelands) will be subject to the HRA process and that CCW will be contacted regarding this process in the immediate future.	Since the publication of the DP Scoping report, Cascade Consulting completed an HRA screening of the draft DP which was circulated to CCW. It concluded the need for an Appropriate Assessment of the River Wye at Wyelands drought order option. This assessment is reflected in the SEA conclusions presented in this ER.
	Figure 2.2		CCW would suggest the resolution of this map should be improved in order that riparian SACs and SSSI's including the Wye, Usk and their tributaries, can be seen clearly.	See response to GCC Q.3
	2.3		With regard to the seasonality of drought options, CCW would suggest that additional consideration needs to be given to potential effects of drought measures in respect of migratory and mobile species including lamprey, salmonids, eels etc. See comments above on Table 2.3 regarding the need for this draft Drought Plan to be subject to HRA.	As drought permit/order options may be implemented at any time of the year, the assessment of impacts on biota, including fish, has taken a worst case scenario approach.
	Table 2.4		Clarification would be welcomed as to when the Environmental Assessment and HRA for the River Wye at Wyelands option will be provided. Given this River's status as an SAC and SSSI, CCW would expect that, in addition to an SEA environmental report, this option must also be subject to HRA and that CCW will be involved within discussions on the proposals.	Investigation of the River Wye option and discussion with other parties is on-going. The draft DP provides a summary of more recent developments, and the ER reflects these changes. The River Wye at Wyelands EAR is expected to be completed by December 2014.
	Table 3.1		Reference should be made to the Habitats Directive Review of Consents process/reports for the River Wye and River Usk SACs. Reference should also be made to the Water Resources Management Plans for Dŵr Cymru, Dee Valley Water, United Utilities and Thames Water and to the existing and draft Drought Plans for Dwr Cymru and United Utilities.	The review of PPP has been updated to include these reports.

Consultee	Scoping Report Review Question	Comment No.	Comment	Response
	4.1.1		CCW welcomes the clarification that the Severn Trent area is not necessarily defined by the supply boundary but also includes source areas however, throughout this report, reference is made to ST supply areas. CCW would suggest that an explanation regarding the difference between supply areas and the Severn Trent Water Region (including source areas) should be made early on in this report and that, for the sake of clarity and consistency, this HRA process should refer to the Severn Trent Water Region as a whole and not just to supply area.	This point will be made earlier on in the ER.
	4.2.1		It is disappointing that very little reference is made to biodiversity policies and initiatives in Wales especially given that Severn Trent's source areas in Wales are confined to areas of extremely high biodiversity interest and subject to international protection.	The review of baseline conditions has been updated in the ER to expand the review of biodiversity in Wales.
	4.4.1		Clarification would be welcomed as to what proportion of the 377Ml/d imported from companies other than Severn Trent, derives from sources in Wales and whether these bulk imports derive from headroom in existing licenses held by other water companies. Clarification would also be welcomed regarding the magnitude/source of water provided by Severn Trent to other water companies, especially from sources in Wales.	See response to comment on Section 2.2. Further details on Severn Trent Water's water supply system are presented in the draft DP.
	4.5.1		Further information would be welcomed regarding the location/amount of water abstracted by Severn Trent from the River Wye., notably in respect to its status as an SAC and in the context of the Review of Consents process. Given the requirement for this draft Drought Plan to be subject to the HRA process, it is suggested that this section should provide information regarding Severn Trent abstractions from SAC rivers.	Details of the drought options are included in the draft DP and in the SEA tables.
	Table 4.4		CCW notes the reference to the Wye CAMS being 'critical to supplies' however, no reference has been made in the context of the Wye to the RoC process and the potential for abstraction adjustments to be required as a result of the RoC process and future licensing of currently non-licensed abstractions. CCW notes that for the Severn Uplands CAMS, water is 'available' for WRMUs 1-9, for the Severn Corridor CAMS, water is available for WRMU A and B and WRMUs 1-4. CCW notes with concern that for all relevant WRMUs for the Wye CAMs, 'no water is available'. Clarification would therefore be welcomed regarding the appropriateness of the potential option within this draft Drought Plan for abstraction at Wyelands.	The outputs for the Wye RoC process has been valuable in the HRA screening process, the results of which have been incorporated in the ER.
	Table 4.5		CCW notes with interest the water quality statistics for the River Wye however, clarification would be welcomed regarding the application of WFD targets in respect of an SAC river. It is suggested that the particular sensitivities and international status of the Wye as an SAC, may require higher water quality targets than required by the Water Framework Directive.	The requirements for any European sites within the zone of influence of any drought option have a strong influence on the assessment of these options. The management objectives for these sites are reviewed in tandem with WFD objectives

Consultee	Scoping Report Review Question	Comment No.	Comment	Response
			Clarification would also be welcomed as to whether the same water quality targets are applied to the Wye on either side of the Wales/England border.	more widely. Water quality targets are being reviewed as part of the collaborative Wye and Usk investigations involving CCW and NE.
	Table 4.6		CCW notes that 4% of water bodies fail to achieve good ecological status because of issues relating to flow/abstraction. Further information would be welcomed as to where these issues occur.	See response to EA Comment relating to p62.
	4.5.1		CCW welcomes the reference to TAN 15.	Noted
	4.5.2		CCW notes the priority for Midlands Region to 'increase the number of agricultural high flow reservoirs'. Clarification would be welcomed as to whether Midlands Region includes the River Wye catchment. Further information would be welcomed as to what is understood by a 'sustainable' abstraction, notably in the context of the need to work within environmental capacities and limits.	The EA Midlands Regional Action Plan does not include the River Wye catchment, but shows how the actions within the Water Resources Strategy for England and Wales will be implemented locally. Sustainable abstraction in this context refers to the need to take the needs of both the environment and water abstractors in to consideration.
	4.5.3		CCW would suggest that, in addition to 'the need to ensure that people understand the value of water', it is also important for people in the Severn Trent supply area to understand and appreciate the source of their water supply.	A large population in the Severn Trent supply area are reliant on water coming some distance from their local area. Severn Trent Water recognise the need for people to understand where their water is sourced from in order to fully appreciate its value. The Key Issues for water have been amended to reflect this.
	Figure 4.6		CCW notes with surprise that land in Wales appears to be classed as non-agricultural on this map. Explanation for this suggestion would be welcomed.	The agricultural land data for Wales has not been made available in time to include

Consultee	Scoping Report Review Question	Comment No.	Comment	Response
				in Figure 4.6, hence the Welsh region of the map is blank. The Figure in the ER includes text to make clear this is not because Wales in non-agricultural, but that the map only includes English data.
	4.6.2		No reference has been made to soil quality and function in the context of climate change and the effects of climate change. In particular, CCW would suggest that a discussion of the issues relating to peat and organic soils and their functions should be presented within this Report.	The Defra (2009) Safeguarding our soils – A Strategy for England report (reviewed as part of the baseline section) includes a consideration of the potential impacts of climate change on peatlands.
	Table 5.1		In principle, CCW agrees with and supports the SEA objectives selected. For the SEA objective for material assets however, CCW would suggest that the word 'efficient' should be changed to 'sustainable' given that efficiency does not necessarily equate to sustainable consumption of natural resources. The need to work within environmental resource capacities and limits would also be welcomed. Similarly, in respect of indicator questions for the material assets topic, it is also suggested that the word 'efficient' should be replaced with 'sustainable'. With regard to the SEA objective for soils. Additional consideration needs to be given to soil function and the need to respect soil function capacities and limits.	The SEA objective has been refined to clarify the need for sustainable, not just efficient, use. The SEA objective referred to quality and quantity of soil, which includes the need to protect soil functions, however to make this explicit 'function' has also been included in this text.

APPENDIX B

REVIEW OF PLANS AND PROGRAMMES

The findings of the review of plans and programmes are set out in **Table B1**. The purpose of the review and the key findings are set out in Section 3 of this Scoping Report. This table sets out the purpose and objectives of the plans and programmes, their potential relationship with Severn Trent Water's DP and their potential implications for the SEA objectives.

Table B1 Summary of the Plans and Programmes reviewed and their link to the Strategic Environmental Assessment

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
International	
United Nations (2002) *Commitments arising from the World Summit on Sustainable Development, Johannesburg*	
The World Summit on Sustainable Development proposed broad-scale principles which should underlie sustainable development and growth. It included objectives such as: Greater resource efficiency Work on waste and producer responsibility New technology development Push on energy efficiency Integrated water management plans needed Minimise significant adverse effects on human health and the environment from chemicals by 2020.	These commitments are the highest level definitions of sustainable development. The DP should be influenced strongly by all of these themes and should seek to take its aims into account. The SEA should seek to promote the achievement of the sustainable development objectives outlined in this plan.
United Nations Economic Commission for Europe (1998) *Aarhus Convention - Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters*	
The Aarhus Convention grants the public rights regarding access to information, public participation and access to justice, in governmental decision-making processes on matters concerning the local, national and transboundary environment. It focuses on interactions between the public and public authorities. The Aarhus Convention has been ratified by the European Community, which has begun applying Aarhus-type principles in its legislation, notably the Water Framework Directive (Directive 2000/60/EC).	The Convention is designed to improve the way ordinary people engage with government and decision-makers on environmental matters. It helps to ensure that environmental information is easy to get hold of and easy to understand. The DP and SEA Environmental Report should seek to provide easily understood information to the public on the environmental implications of the DP and its constituent options.
United Nations (1992) Convention on Biological Diversity (CBD)	
The main objectives are: Conservation of biological diversity Sustainable use of its components Fair and equitable sharing of benefits arising from genetic resources	The commitment to conserving biological diversity must be considered in any DP options and the SEA should seek to promote the protection and enhancement of biodiversity.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
UNESCO World Heritage Convention (1972)	
The aims of the Convention are: defining cultural and natural heritage; recognising the protection and conservation; understanding the value; and establishing 'the World Heritage fund'.	The DP and SEA should consider and take account of any potential impacts to heritage landscapes and assets.
European Commission (2008) The 2008 Ambient Air quality Directive (2008/50/EC)	
The 2008 ambient air quality directive (2008/50/EC) sets legally binding limits for concentrations in outdoor air of major air pollutants that impact public health such as particulate matter (PM10 and PM2.5) and nitrogen dioxide (NO2). As well as having direct effects, these pollutants can combine in the atmosphere to form ozone, a harmful air pollutant (and potent greenhouse gas) which can be transported great distances by weather systems.	The implementation of options within the DP may have some influence on air quality, either directly or indirectly through construction or operation activities. The DP and SEA should seek to ensure that the region's air quality is maintained or enhanced, and that emissions of air pollutants are kept to a minimum.
European Commission (2009) Birds Directive (2009/147/EC)	
The Directive provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. It sets broad objectives for a wide range of activities, although the precise legal mechanisms for their achievement are at the discretion of each Member State (in the UK delivery is via several different statutes).	The DP and SEA will need to take account of commitments for SPAs within the DP area.
European Commission, Floods Directive (2007/60/EC)	
The Directive's aim is to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. The Directive shall be carried out in coordination with the Water Framework Directive, notably by flood risk management plans and river basin management plans being coordinated, and through coordination of the public participation procedures in the preparation of these plans.	The DP may have some linkages with the aims of the Flood Directive, although flood control coastal erosion remains outside of the remit of the DP. The SEA objectives should ensure that flood risk is included to ensure that environmental and social benefits are gained.
European Commission (2006) Fresh Water Fish Directive (2006/44/EC)	
The Directive seeks to protect those fresh waterbodies identified by Member States as waters suitable for sustaining fish populations. For those waters, it sets physical and chemical water quality objectives for salmonid waters and cyprinid waters. The Directive is designed to protect and improve the quality of rivers and lakes to encourage healthy fish populations.	The DP should cause no adverse effects on rivers and lake water quality, such that these waterbodies are able to sustain healthy and appropriate fish populations.
European Commission, Animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals (2006/88/EC)	
The Directive establishes: Animal health requirements for the placing on the market, importation and transit of aquaculture animals and their	The implementation of the DP may influence biodiversity in the Severn Trent supply area and as such the SEA

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
products; Minimum measures to prevent diseases in aquaculture animals; Minimum measures to be taken in response to suspected or established cases of certain diseases in aquatic animals.	should seek to maintain or enhance the quality of habitats and biodiversity.
Council of Europe (2006) European Landscape Convention	
European Landscape Convention (ELC) is the first international convention to focus specifically on landscape. Natural England implements the European Landscape Convention in England. The aims of the 2009/10 action plan are: Lead on improving the protection, planning and management of all England's landscapes Raise the quality, influence and effectiveness of policy and practical instruments Increase the engagement in and enjoyment of landscapes by the public Collaborate with partners across the UK and Europe.	The implementation of the DP may influence landscape or the enjoyment of landscapes. As such the SEA should seek to maintain or enhance the quality of the regions landscapes and the potential enjoyment of these landscapes.
European Commission, Environmental Liability Directive (2004/35/EC)	
The Directive establishes a framework for environmental liability based on the "polluter pays" principle, with a view to preventing and remedying environmental damage.	The DP will need to take account of the Directive. SEA should seek to ensure that the DP avoids causing direct or indirect damage to the aquatic environment or contamination of land that creates a significant risk to human health.
European Commission (2000) The Water Framework Directive (2000/60/EC)	
This Directive establishes a framework for the protection of inland surface waters, transitional waters, coastal water and groundwater. It also encourages the sustainable use of water resources. Key objectives are general protection of the aquatic ecology, specific protection of unique and valuable habitats, protection of drinking water resources, and protection of bathing water.	DP will need to take account of the objectives of the WFD for waterbodies, including those to improve status and prevent status deterioration. The SEA should seek to ensure that objectives address the objectives of the WFD.
European Commission, Drinking Water Directive (1998/83/EC)	
The objective of the Drinking Water Directive is to protect the health of the consumers in the European Union and to make sure the water is clean and of good quality. To make sure drinking water everywhere in the EU is healthy, clean and tasty, the Drinking Water Directive sets standards for the most common substances (so-called parameters) that can be found in drinking water. A total of 48 microbiological and chemical parameters must be monitored and tested regularly.	The DP will need to take account of the Drinking Water Directive. The SEA should seek to ensure that options would maintain and improve drinking water quality in a sustainable way.
European Commission (1992) Habitats Directive (1992/43/EC)	
The aim of the Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Directive at a favourable conservation status, introducing robust protection for those habitats and species of European importance. Note that the National Planning Policy Framework identifies that the following wildlife sites should be given the same protection as	The DP must ensure full compliance with the Regulations. The SEA should ensure a positive contribution to the habitats and species plan area.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
European sites: -potential Special Protection Areas and possible Special Areas of Conservation; - listed or proposed Ramsar sites; and - sites identified, or required, as compensatory measures for adverse - effects on European sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.	
Council of Europe: The Convention on the Protection of Archaeological Heritage (Revised) (Valetta Convention) (1992)	
The convention defines archaeological heritage and identifies measures for its protection. Aims include integrated conservation of the archaeological heritage, and financing of archaeological research and conservation.	The DP and SEA should consider and take account of any potential impacts to heritage landscapes and assets.
Planning (Listed Buildings and Conservation Areas) Act (1990)	
An act to consolidate certain enactments relating to special controls in respect of buildings and areas of special architectural or historic interest with amendments to give effect to recommendations to give effect to recommendations of the Law Commissions.	The DP and SEA should consider and take account of any potential impacts to areas of special architectural or historic interest.
The Bonn Convention on the Conservation of Migratory Species of Wild Animals (1983)	
Aims to conserve terrestrial, marine and avian migratory species throughout their range. Enforced in European legislation through the Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC).	The impacts of the DP options on important Bird habitats (i.e. Ramsar sites and SPA designated sites) must be considered as part of the SEA.
The Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979)	
International convention which aims to ensure conservation of wild flora and fauna species and their habitats. Special attention is given to endangered and vulnerable species, including endangered and vulnerable migratory species specified in appendices. Enforced in European legislation through the Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC).	The potential impacts of the DP options on internationally designated sites, species and important Bird habitats must be considered as part of the SEA.
DCMS Ancient Monuments and Archaeological Areas Act (1979)	
An act to consolidate and amend the law retain to ancient monuments, to make provision of matters of archaeological or historic interest, and to provide grants by secretary of state to the Architectural Heritage fund.	The DP and SEA should consider and take account of any potential impacts to heritage landscapes and assets.
Ramsar Convention The Convention on Wetlands of International Importance (1971)	
The Convention on Wetlands (Ramsar, Iran, 1971) (the "Ramsar Convention") is an intergovernmental treaty that embodies the commitments of its member countries to maintain the ecological character of their Wetlands of International Importance and to plan for the "wise use", or sustainable use, of all of the wetlands in their territories.	The impacts of the DP options on important wetland habitats must be considered as part of the SEA.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
The Groundwater Directive (Protection of Groundwater Against Pollution Caused by Certain Dangerous Substances) (80/68/EEC)	
The Directive prevents pollution of groundwater by controlling discharges and disposals, including accidental loss of certain substances. The objective of this directive is to prevent pollution of groundwater. This directive will be repealed by the Water Framework Directive as of 21 December 2013.	The DP should take account of the main objective of the Directive to prevent pollution of groundwater.
Bathing Water Quality Directive (76/160/EEC)	
The quality of designated bathing waters in England is monitored against standards in the bathing water regulations (SI 1991/1597), which come from the EC Bathing Water Directive . This Directive is repealed by Bathing Water Quality Directive 2006/7/EC with effect from 31 December 2014.	The DP should take account of the objectives set out in the Bathing Water Quality Directives.
Urban Waste Water Treatment Directive (91/271/EEC)	
Objective is to protect the environment from the adverse effects of urban waste water discharges and discharges from certain industrial sectors (see Annex III of the Directive) and concerns the collection, treatment and discharge of: Domestic waste water Mixture of waste water Waste water from certain industrial sectors	The DP should take account of the aims and objectives set out in the Urban Waste Water Treatment Directive and ensure that the plan does not have an adverse effect on these objectives.
Nitrates Directive (91/676/EEC)	
The Directive aims to reduce and prevent the pollution of water caused by nitrates from agricultural sources. It is designed both to safeguard current and future drinking water resources and to prevent wider ecological damage in the form of eutrophication.	A large proportion of the DP area has been designated a Nitrate Vulnerable Zone. The DP and SEA should take account of this Directive and seek to avoid impacts on water quality.
European Commission (2009) *Promotion of the use of energy from renewable sources Directive (2009/28/EC)*	
This Directive establishes a common framework for the use of energy from renewable sources in order to limit greenhouse gas emissions and to promote cleaner transport. To this end, national action plans are defined, as are procedures for the use of biofuels.	The DP involves options with power requirements and should seek to promote energy efficiency, as well as seeking to reduce the effects of climate change through greenhouse gas emissions. The SEA should also promote the use of renewable energy, where relevant.
National	
Cadw, CCW and ICOMOS (UK) (International Council on Monuments and Sites) (2001), *Register of Landscapes of Historic Importance*	
Two-volume Register of Landscapes of Historic Interest in Wales. This advisory and non-statutory document highlights what are considered to be the best examples of different types of historic	The DP and SEA should consider and take account of any potential impacts to heritage landscapes and assets.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
landscape in Wales and was the first step towards raising the profile of historic landscapes in Wales.	
Countryside Council for Wales (CCW) (2003) *Priority Habitats of Wales*	
Gives information about Wales' priority habitats, as identified by UK Biodiversity Action Plans.	The DP and SEA objectives will need to consider the protection of priority habitats.
Defra (2011) Government Review of Waste Policy in England 2011	
The review is guided by the "waste hierarchy", EU obligations and targets on waste management, carbon impacts, environmental objectives and the costs and benefits of different policy options. The Governments vision include a move beyond the current throwaway society to a "zero waste economy" in which material resources are re-used, recycled or recovered wherever possible, and only disposed of as the option of very last resort.	The DP may involve options that involve the generation of waste (e.g. either through construction requirements or operation of supply side options). The SEA should seek to enhance recycling and minimise the amount of waste going to landfill.
Defra (2011) *Water for Life -Water White Paper*	
The Water White Paper describes the Governments intentions to take forward a catchment-based approach to water quality and diffuse pollution and work towards Common Agricultural Policy reforms that will promote the farming industry's role as custodian of the natural environment. The Water White Paper also identifies that the strategic policy statement for Ofwat and revised social and environmental guidance will give a strong steer on Government support for approaches that offer good value for customers and the potential to prevent and manage future risks to drinking water quality. Key reforms are identified as: • Introduce a reformed water abstraction regime • We set out changes to deal with the legacy of over-abstraction of our rivers; • We re-affirm the catchment approach to dealing with water quality and wider environmental issues; • Remove barriers to the greater trading of abstraction licences and bulk supplies of water to make our supply system more flexible; • With the Environment Agency and Ofwat provide clearer guidance to water companies on planning for the long-term, and keeping demand down; • Consult on the introduction of national standards and a new planning approval system for sustainable drainage; • Address the historical unfairness of high bills in the South West; and • Encourage water companies to introduce social tariffs to support vulnerable customers.	The Water Paper is a key document outlying a new approach to water management which has direct links with the DP. The DP and SEA must reflect the reforms and messages in the Water White Paper. For example provide solutions which abstract water sustainably, enable catchment management of water quality and water resources and encourage customers to use water efficiently.
The Climate Change Act (2008)	
The Climate Change Bill was introduced into Parliament in November 2007 and became law on November 26 2008. The Act sets ambitious, legally binding targets and takes powers to help	The DP should consider future climate change and include provisions to reduce greenhouse gas emissions to help meet

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
meet those targets. Key provisions of the Act include: • a legally binding target of an 80% cut in greenhouse gas emissions by 2050. Also a reduction in emissions of at least 34% by 2020. Both targets are against a 1990 baseline. • a carbon budgeting system	the targets.
Defra (2012) *The UK Climate Change Risk Assessment 2012 Evidence Report*	
Draws together and interprets the evidence gathered by CCRA regarding current and future threats and opportunities for the UK posed by the impacts of climate change up until 2100. Findings of the assessment include: • Increasing pressure on the UK's water resources due to changes in hydrological conditions, population growth and regulatory requirements to maintain good ecological status. Major supply-demand deficits were identified for five river basin regions including the Severn and Humber river basin districts. • Increases in water demand for irrigation of crops. • Lower summer rivers flows across the UK due to warming and drying conditions. • An increase in precipitation in winter months due to a combination of greater depths and more frequent heavy rainfall events - suggesting larger volumes of runoff with potential negative impacts on flood risk and sewer overflows in urban environments. • Flash-flooding associated releases from combined sewer overflows (CSO) could in turn increase associated illnesses at the coast due to the varying occurrence of microbial pathogens in the marine environment.	The DP is closely linked to some of the impacts of climate change and can also influence the magnitude of such impacts. The SEA should seek to ensure that the DP considers the findings of the CCRA as part of DP formulation and selection of options.
Defra (2011) The Natural Choice: securing the value of nature. The Natural Environment White Paper	
Addresses the Government's approach to valuing economic and social benefits of a healthy natural environment while continuing to recognise nature's intrinsic value. It describes the vision of the Government for this to be the first generation to leave the natural environment of England in a better state than it inherited, requiring placing the value of nature at the heart of decision-making – in Government, local communities and businesses. Approaches to mainstream the value of nature across society include: • facilitating greater local action to protect and improve nature; • creating a green economy, in which economic growth and the health of our natural resources sustain each other, and markets, business and Government better reflect the value of nature; • strengthening the connections between people and nature to the benefit of both; and • showing leadership in the European Union and	The DP supports the provisioning service of freshwater through ensuring security of supply. Other related ecosystem services may include: • Provisioning Services: Biodiversity • Regulating Services: Water Regulation • Cultural services: Recreation and ecotourism • Cultural services: Cultural heritage values • Cultural services: Aesthetic The SEA should ensure the DP effects the related provisioning services in the least damaging way through informing the DP formulation and selection of options.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
internationally, to protect and enhance natural assets globally	
Defra (2010) Delivering a Healthy Natural Environment. Ecosystem Approach Action Plan(updated)	
The Ecosystem Approach Action Plan (EAAP) highlights that taking an ecosystems approach can help deliver our natural environment outcomes more effectively and efficiently and to help society make better informed decisions about how to balance economic, environmental and social objectives in pursuit of sustainable development.	The SEA should ensure the DP effects the related provisioning services in the least damaging way through informing the DP formulation and selection of options.
Defra (2010) Making Space for Nature: A Review of England's Wildlife Sites and Ecological Network	
This independent review of England's wildlife sites and the connections between them sets objectives and recommendations to help achieve a healthy natural environment that will allow our plants and animals to thrive.	The DP should seek to maintain or enhance the quality of habitats and biodiversity.
Defra (2010) *Noise Action Plan (NAP) West Midlands Agglomeration*	
The Action Plan is designed to address the management of noise issues and effects in the West Midlands agglomeration. In particular it covers the noise issues arising from road, railway, aviation and industrial sources. The Action Plan is confined to the noise sources mentioned and does not affect the management of noise from any other sources. The Action Plan aims to promote good health and good quality of life. The NAP is in sections covering each particular noise source. Each of these includes information on the current approach to noise management; a summary of the noise-mapping results; identification of problems and situations to be investigated; noise reduction measures already in force and any projects in preparation; actions the competent authority intends to take and the long term strategy for noise from the specific source.	Some options in the DP could present noise issues either through construction or operation. The implementation of the DP may have some influence on noise issues, either directly or indirectly through construction or operation activities. The DP and SEA should seek to ensure that noise levels are reduced during the plan period and aim to promote good health and good quality of life with respect to noise.
Defra (2009) Safeguarding our soils – A Strategy for England	
The new Soil Strategy for England – Safeguarding our Soils – outlines the Government's approach to safeguarding our soils for the long term. It provides a clear vision to guide future policy development across a range of areas and sets out the practical steps that we need to take to prevent further degradation of our soils, enhance, restore and ensure their resilience, and improve our understanding of the threats to soil and best practice in responding to them. The Governments vision is that: By 2030, all England's soils will be managed sustainably and degradation threats tackled successfully. This will improve the quality of England's soils and safeguard their ability to provide essential services for future generations.	Some options in the DP could affect soils either through construction or operation. The SEA should seek to ensure that the quality of the regions soils and their management is protected or enhanced.
Defra (2008) Invasive Non-Native Species Framework Strategy for Great Britain	

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
The Strategy is intended to provide a strategic framework within which the actions of government departments, their related bodies and key stakeholders can be better co-ordinated. Its overall aim is to minimise the risks posed, and reduce the negative impacts caused, by invasive non-native species in Great Britain.	Some options in the DP could influence the negative impacts caused by invasive non-native species in the region. The SEA should seek to ensure that options within the DP do not increase the risks posed or impacts caused by invasive non-native species.
Defra (2008) Future Water: the Government's water strategy for England	
This strategy is the high level Government document which outlines how the Government wants the water sector to look by 2030, considering issues of water demand, water supply, water quality in the natural environment, surface water drainage, river and coastal flooding, greenhouse gas emissions and charging. The Strategy states that "by 2030 at the latest, we have: Improved the quality of our water environment and the ecology which it supports, and continued to provide high levels of drinking water quality from our taps. Sustainably managed risks from flooding and coastal erosion, with greater understanding and more effective management of surface water. Ensured a sustainable use of water resources, and implemented fair, affordable and cost-reflective charges".	The aims of the strategy and the DP are closely linked. The DP must consider the aims of the strategy. The SEA should seek to ensure that the themes included in the strategy objectives are also reflected in the SEA objectives, particularly around water quality in the region, the quality of aquatic ecology, drinking water quality, resource use, energy use and greenhouse gas emissions, and adaptation to climate change.
Defra (2007) The Air Quality Strategy for England, Scotland and Wales	
This latest strategy does not remove any of the objectives set out in the previous strategy (see below) or its addendum, apart from replacing the provisional 2010 PM_{10} objective in England, Wales and Northern Ireland with the exposure reduction approach. The strategy introduces a new ozone objective to protect ecosystems, in line with the EU target value set out in the Third Daughter Directive.	The implementation of the DP may have some influence on air quality, either directly or indirectly through construction or operation activities. The DP and SEA should seek to ensure that limit values for air pollutants are not exceeded and pollutant emissions are reduced during the plan period.
Defra (2011) *Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services*	
The strategy builds on the Natural Environment White Paper, which highlighted the need to properly value nature, following the strong economic arguments for safeguarding and enhancing the natural environment presented in the UK National Ecosystem Assessment. Sets out the Government's ambition to halt overall loss of England's biodiversity by 2020, and in the longer term to move progressively from a position of net biodiversity loss to net gain.	The DP should consider the aims of the strategy and the SEA should ensure those aims are effectively integrated.
Defra (2007) Conserving Biodiversity in a Changing Climate: Guidance on Building Capacity to Adapt	

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
The guiding principles described in this document summarise current thinking on how to reduce the impacts of climate change on biodiversity and how to adapt existing plans and projects in the light of climate change. The guidance is intended to inform implementation of the UK Biodiversity Action Plan, taking account of climate change is relevant to the fulfilment of many international agreements and obligations affecting the UK.	The DP must consider the impacts on biodiversity whilst also taking into account the potential for future climate change, the SEA should ensure these are addressed in an integrated way.
Defra (2005) Making space for water: taking forward a new government strategy for flood and coastal erosion risk management in England	
The strategy outlines how to manage the risks from flooding and coastal erosion in the UK. The strategy aims to reduce the threat of flooding to people and their property, and to deliver the greatest environmental, social and economic benefit, consistent with the Government's sustainable development principles.	The DP must consider the impacts on flooding. The SEA should seek to ensure that the DP delivers the greatest environmental and social benefit.
Defra (2005) Securing the Future: Delivering UK Sustainable Development Strategy	
The strategy for sustainable development aims to enable all people to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations. The strategy places a focus on protecting natural resources and enhancing the environment.	The SEA must seek to ensure that objectives relating to sustainable development, sustainable resource use and protecting the natural environment, are considered when assessing the potential impacts of the DP.
Defra (2004) The First Soil Action Plan for England	
This plan is a comprehensive statement on the state of the UK's soils and how Government and other partners were working together to improve them. Ensure that England's soils will be protected and managed to optimise the varied functions that soils perform for society (e.g. supporting agriculture and forestry, protecting cultural heritage, supporting biodiversity, as a platform for construction) in keeping with the principles of sustainable development.	Some options in the DP have the potential to effect soils. The SEA should seek to ensure that the quality of the region's land, including soils, is protected or enhanced.
Defra (2004) *Rural Strategy*	
The strategy sets out rural and countryside policy, and draws upon from lessons learnt following the rural white paper. Objectives include supporting economic and social regeneration across rural England and enhance the value of the countryside and protect the natural environment for this and future generations.	Certain DP options may have an effect upon rural communities and the countryside. The SEA should also seek to ensure that the quality of the region's landscapes, natural resources and biodiversity are maintained or enhanced.
Defra (2006) *Sustainable Farming and Food Strategy: Forward Look*	
Forward Look builds on the Sustainable Farming and Food Strategy (SFFS) published in December 2002. It sets out the Government's priorities for delivering a sustainable farming and food sector.	The implementation of the DP may have some indirect links with the food industry, through ensuring the availability of water for food based activities. The SEA should also seek to promote the most effective use of the region's natural resources, including

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
	soil, biodiversity and energy resources.
DETR, The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. Working together for clean air (2000).	
This strategy describes the plans drawn up by the Government to improve and protect ambient air quality in the UK in the medium-term and aims to reduce the health risk and environmental degradation from eight main air pollutants without imposing unacceptable economic or social costs.	The implementation of the DP may have some influence on air quality, either directly or indirectly through construction or operation activities. The SEA should seek to ensure that the region's air quality is maintained or enhanced, and that emissions of air pollutants are kept to a minimum.
Department for Energy and Climate Change (2007) *Energy White Paper: Meeting the Energy Challenge*	
'Meeting the energy challenge', sets our international and domestic energy strategy, in the shape of four policy goals: • aiming to cut CO2 emissions by some 60% by about 2050, with real progress by 2020 • maintaining the reliability of energy supplies • promoting competitive markets in the UK and beyond • ensuring every home is heated adequately and affordably.	The implementation of the DP may have an influence upon Severn Trent Water's total energy use. The SEA should seek to promote energy efficiency, as well as seeking to reduce the effects of climate change through greenhouse gas emissions. The SEA should also promote the use of renewable energy, where relevant.
Department for Culture, Media and Sport (2001) The Historic Environment – A Force for the Future	
This strategy outlines the Governments policy regarding the historic environment. The strategy has key aims and objectives that demonstrate the contribution the historic environment makes to the country's economic and social well-being.	The implementation of the DP may have an influence on the heritage of the region. The SEA should seek to ensure any adverse effects on heritage assets are minimised or avoided.
Department for Communities and Local Government (2009) *Circular on the Protection of World Heritage Sites*	
The purpose of the circular is to provide updated policy guidance on the level of protection and management required for World Heritage Sites (WHSs). The circular explains the national context and the Government's objectives for the protection of WHSs, the principles which underpin those objectives, and the actions necessary to achieve them.	The SEA should consider the potential effects of the DP on the historic environment, particularly World Heritage Sites and other designated assets and their settings.
English Heritage (2010) Strategic Environmental Assessment, Sustainability Appraisal and the Historic Environment	
Guidance for addressing the historic environment in Strategic Environmental Assessment or Sustainability Appraisal.	The SEA should consider the potential effects of the DP on the historic environment, particularly designated assets and their settings, and to important wetland areas with potential for palaeo-environmental deposits.
Environment Agency (2010) National Flood and Coastal Risk Management Strategy for England	

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
This strategy describes what needs to be done by all organisations involved in flood and coastal erosion risk management. These include local authorities, internal drainage boards, water and sewerage companies, highways authorities, and the Environment Agency. They all act to reduce the risk of flooding and coastal erosion, and manage its consequences.	The DP must consider potential effects to flood risk. The SEA should seek to ensure that flood risk in the region is not adversely affected by the implementation of the DP.
Environment Agency (2010) Corporate Plan 2011 - 2015	
The strategy sets out the Environment Agency's priorities for the environment between 2011 and 2015. Core policy themes provide the framework for the Environment Agency's work, including: Act to reduce climate change and its consequences Protect and improve water, land and air Work with people and communities to create better places Work with businesses and other organisations to use resources wisely	There is considerable links between the core themes of the strategy and the DP. The SEA should seek to ensure that strategy objectives are also reflected in the SEA objectives particularly regarding the protection and improvement of water, land and air.
Environment Agency (2010) *Water Resources Action Plan for England and Wales*	
The strategy has four main aims: Adaptation to and mitigation of climate change; A better water environment; Sustainable planning and management of water resources; People valuing water and the water environment.	There is considerable links between the core themes of the strategy and the DP. The SEA should seek to ensure that strategy objectives are also reflected in the SEA objectives particularly regarding the sustainable management of water resources and protecting the environment.
Environment Agency (2009) Water Resources Strategy for England and Wales	
This is the national Environment Agency strategy for water resource management in the long term. It looks to 2050 and considers the impacts of climate change, the water environment, water resource and valuing water. Aims and objectives include: Ensure water is used efficiently in homes and buildings, and by industry and agriculture Provide greater incentives for water companies and individuals to manage demand Share existing water resources more effectively	There is considerable links between the core themes of the strategy and the DP. The SEA should seek to ensure that strategy objectives are also reflected in the SEA objectives, particularly around water resource use and availability in the region.
Environment Agency (2009) Creating a Better Place: Environment Agency Corporate Strategy 2010-2015	
The strategy sets out the Environment Agency's ambitions for the environment between 2010 and 2015. Core policy themes provide the framework for the Environment Agency's work, including: Act to reduce climate change and adapt to its consequences Protect and improve water quality Put people and communities at the heart of what we do Work with businesses and the public sector to use resources wisely.	There is considerable links between the core themes of the strategy and the DP. The SEA should seek ensure that the strategy objectives are also reflected in the SEA objectives.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
Environment Agency (2007) Soil a precious resource: Strategy for protecting, managing and restoring soil	
Looking after soil is central to achieving the Environment Agency's vision and involves the following : Protect people and wildlife by preventing the build-up of harmful substances in soil Protect water, air and soil from pollution by promoting good soil management Protect people from flooding by encouraging land management practices which slow the rate at which water reaches the rivers Support the clean-up of damaged soil to prevent harm to people, wildlife and the environment Improve our understanding of soil so we can make better decisions about how to protect people and the environment.	Some options in the DP may affect the soil resource. The SEA should seek to ensure that the quality of the regions soils and their management is protected or enhanced.
Environment Agency (2010) *Managing Water Abstraction*	
This document provides sets out the national policy and regulatory framework within which we manage water resources and the implementation of CAMS at the local level. The key aim of the CAMS is to make more information on water resources allocation publicly available and allow the balance between the needs of abstractors and those of the aquatic environment to be determined in consultation with the local community and interested parties.	There is a direct link between the water availability in the region and the DP. The SEA should consider the range of impacts that changes to abstractions could have on the environment, including waterbodies, biodiversity, and water users.
Environment Agency (1999) Restoring Sustainable Abstraction Programme	
Investigative programme to identify sites at risk of environmental damage from abstraction licences. The RSA programme is a way of prioritising and progressively examining and resolving these concerns. Environment Agency investigation of designated sites (Natura2000, Sites of Special Scientific Interest (SSSI), Local Nature Reserves (LNR)) potentially at risk – leading to proposals for licence amendment for sustainable abstraction.	There is a direct link between the RSA programme and the DP. The SEA should take into account those sites that have been identified by the RSA as being at risk from environmental damage from abstraction licences and assess the implications of the DP.
Environment Agency, *Shoreline Management Plans*	
A large-scale assessment of the risks associated with coastal processes with the aim to help reduce these risks to people and the developed, historic and natural environments. Coastal processes include tidal patterns, wave height, wave direction and the movement of beach and seabed materials. The second generation of Shoreline Management Plans (SMPs) are currently in production, covering the entire 6000 kilometres of coast in England and Wales. This generation of plans aim to incorporate sea level rise resulting from climate change and current defences with limited life and improvement requirements.	It is unlikely that the DP will influence coastal processes.
Environment Agency Wales, *Salmon Action Plans*	
The Environment Agency Wales has prepared a series of action plans, based on river catchments, setting out what needs to be done to support and restore salmon populations. A total of 63	The DP has the potential to influence salmonid waters in the region. The SEA should seek to maintain or

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
plans were being prepared for salmon rivers in England and Wales by 2002 as part of the Agency's National Salmon Management Strategy. The Plans identify and cost a series of actions designed to help safeguard and improve Salmon populations.	enhance the quality of habitats and biodiversity particularly those of Salmon identified in the Action Plans. The SEA will cover fish passage as an element of at least one sustainability objective.
Environment Agency (2009) *Water Resources Strategy for Wales*	
Launched on 30 March 2009, covering the actions that the Environment Agency believes need to be taken to ensure that there is enough water for people and wildlife in the face of future pressures. These include: climate change population growth diffuse pollution water for wildlife and wetlands The strategy looks at resource management for Wales to 2050 and beyond.	Options in the DP are located in Wales. The DP should seek to ensure that water supplies and resources are maintained or enhanced. The SEA should ensure that the core themes of the strategy are reflected in the SEA objectives.
Environment Agency (undated*) WFD River Basin Characterisation Project: Technical Assessment Method - River abstraction and flow regulation*	
This paper describes the method used to assess the likelihood of river waterbodies achieving the relevant WFD objectives as a result of artificial influences on low river flows.	Implementation of the DP may impact river water quality. The SEA should seek to promote the protection and enhancement of biodiversity and river water quality across the region.
Environment Agency (undated*) Hydroecology: Integration for modern regulation*	
This paper describes clear way forward in terms of hydroecology and a strategic direction to its development and application.	The DP and SEA should ensure relevant ecological considerations are integral to water resource evaluation and management decisions across the range of temporal and spatial scales.
Communities and Local Government (2012) National Planning Policy Framework	
The NPPF sets out the Government's planning policies for England and replaces most former planning policy in England. It constitutes guidance for local planning authorities and decision-takers both in drawing up plans and as a material consideration in determining applications. At the heart of the National Planning Policy Framework is a presumption in favour of sustainable development. It presents guidance under broad themes which include Promoting healthy communities; Protecting Greenbelt Land; Meeting the challenge of climate change, flooding and coastal change; Conserving and enhancing the natural environment; Conserving and enhancing the historic environment. The NPPF identifies a set of core land-use planning principles that should underpin both plan-making and decision-taking under the planning system which include: Contribute to conserving and enhancing the natural environment and reducing pollution. Allocations of land for development	The NPPF replaces most former planning policy in England. Therefore there are considerable linkages with the DP. The DP must consider the NPPF and the SEA must ensure the NPPF is reflected in an integrated way.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
should prefer land of lesser environmental value, where consistent with other policies in this Framework; Promote mixed use developments, and encourage multiple benefits from the use of land in urban and rural areas, recognising that some open land can perform many functions (such as for wildlife, recreation, flood risk mitigation, carbon storage, or food production); Support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change, and encourage the reuse of existing resources, including conversion of existing buildings, and encourage the use of renewable resources (for example, by the development of renewable energy); Take account of the different roles and character of different areas, promoting the vitality of our main urban areas, protecting the Green Belts around them, recognising the intrinsic character and beauty of the countryside and supporting thriving rural communities within it; Encourage the effective use of land by reusing land that has been previously developed (brownfield land), provided that it is not of high environmental value; Conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations; Take account of and support local strategies to improve health, social and cultural wellbeing for all, and deliver sufficient community and cultural facilities and services to meet local needs.	
The Waste (England and Wales) Regulations, 2011	
These regulations implement the revised Waste Framework Directive (2008/98/EC). Their main objective is to ensure that the competent authorities establish one or more waste prevention programmes and waste prevention plans, no later than 12th December 2013, with the overall aim of protecting the environment and human health by preventing or reducing the adverse impacts of the generation and management of waste and by reducing overall impacts of resource use and improving the efficiency of use.	The DP could result in the production of additional waste and will involve resource use both during construction and operation. The SEA should seek to prevent or reduce the production of waste and ensure resources are used efficiently and sustainably.
The Conservation of Habitats and Species Regulations 2010	
Updated legislation transposing the Habitats Directive into national law. Consolidate all the many amendments which have been made to the Regulations since they were first made in 1994.	See under Habitats Directive
Flood and Water Management Act, 2010	
The Flood and Water Management Act 2010 aims to provide better, more comprehensive management of flood risk for people, homes and businesses. It aims improve efficiency in the water industry, improve the affordability of water bills for certain	There are direct links between the Flood and Water Management Act 2010 and the DP.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
groups and individuals, and help ensure continuity of water supplies to the consumer.	The SEA should ensure the aims of the Flood and Water Management Act 2010 are reflected in the SEA objectives.
The Environmental Damage (Prevention and Remediation) Regulations 2009	
These regulations provide additional protection to habitats and species identified on Annexes 1 and 2 of the EC Habitats Directive (92/43/EEC), SSSIs and, in some cases, classified waterbodies from environmental damage where an operator has intended to cause damage or been negligent to the potential for damage. Applies to the most serious categories of environmental damage, including: Contamination of land that results in a significant risk of adverse effects on human health Adverse effects on surface water or groundwater consistent with a deterioration in the water's status Adverse effects on the integrity of a Site of Special Scientific Interest (SSSI) or on the conservation status of species and habitats protected by EU legislation outside SSSIs.	The DP must consider the guidance provided by the regulations.
The Eels (England and Wales) Regulations 2009 *(as amended)*	
Implement European Council Regulations 1100/2007 establishing measures for the recovery of the stock of European eel. The Regulations will help implement delivery Eel Management Plans. They address eel records and re-stocking, close season and reduction of fishing effort, passage of eels and entrainment. The key objective is to ensure that at least 40% of the potential production of silver eels returns to the sea to spawn. This will be achieved by reducing exploitation of all life-stages of the eel and restoration of their habitats.	The DP may affect the passage of eels. The SEA should seek to should seek to address migratory fish species and their migratory passage.
Natural Environment and Rural Communities Act, 2006	
This Act makes provision about bodies concerned with the natural environment and rural communities in connection with wildlife, sites of special scientific interest, National Parks and the Broads. The Natural Environment and Rural Communities Act is designed to help achieve a rich and diverse natural environment and thriving rural communities.	The SEA should seek to maintain or enhance the quality of habitats and biodiversity. The impacts of the DP on any designated features, as highlighted in the Natural Environment and Rural Communities Act, should be addressed.
The Water Act, 2003	
The Water Act 2003 is in three Parts, relating to water resources, regulation of the water industry and other provisions. The four broad aims of the Act are: The sustainable use of water resources Strengthening the voice of consumers A measured increase in competition	The implementation of the DP may have an effect through its role in maintaining supplies of water. The SEA should seek to promote sustainable use of water resources.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
The promotion of water conservation.	
The Water Environment (Water Framework Directive) (England and Wales) Regulations, 2003	
These Regulations make provision for the purpose of implementing in river basin districts within England and Wales The Water Framework Directive (2000/60/EC) of the European Parliament. The Regulations require a new strategic planning process to be established for the purposes of managing, protecting and improving the quality of water resources.	DP will need to take account of the regulations. The SEA should seek to promote the protection and enhancement of all water resources. The SEA should seek to maintain, protect and improve water quality across the region and ensure efficient use of resources.
The Countryside and Rights of Way (CROW) Act, 2000	
The Act provides for increased public access to the countryside and strengthens protection for wildlife. The main provisions of the Act are as follows: Extends the public's ability to enjoy the countryside whilst also providing safeguards for landowners and occupiers Creates new statutory right of access to open country and registered common Land Use Consultants Modernises Right of Way system Gives greater protection to SSSIs Provides better management arrangements for AONBs Strengthens wildlife enforcement legislation.	The DP may have an effect on public access to the countryside. The SEA should include objectives that take into account public access, protection of SSSIs and the management of relevant landscape designations.
Environment Act, 1995	
The Environment Act set up the Environment Agency to manage resources and protect the environment in England and Wales	The DP may have an effect on resources and the environment. The SEA should seek to promote the protection and enhancement of all water resources without having negative effects on other aspects of the Environment.
Water Resources Act, 1991 (Amendment) (England and Wales) Regulations 2009 SI3104	
Amends Water Resources Act 1991 by extending the use of Water Protection Zones and Works Notices, in particular to deal with harm to aquatic ecosystems caused by the physical characteristics of a water course or lake, such as quantity, structure and substrate of river/lake bed. Aligns the Water Resources Act with the hydromorphological requirements of the WFD	The DP may affect geomorphological processes. The SEA should include objectives that cover hydromorphological aspects and seek to ensure that hydromorphological features within the plan are maintained or enhanced.
Wildlife and Countryside Act, 1981	
The Act is the principle mechanism for providing legislative	Some aspects of the DP may have effects

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
protection of wildlife in Great Britain. Species listed in Schedule 5 of the Act are protected from disturbance, injury, intentional destruction or sale. Other provisions outlaw certain methods of taking or killing listed species. This Act is brought up to date regularly to ensure the most endangered animals are on the schedule. The Act also improved protection for the most important wildlife habitats.	on habitats and species in the Severn Trent supply area and beyond. The SEA should ensure the DP seeks to maintain or enhance the quality of habitats and biodiversity, and take regard of protected species and habitats.
Salmon and Freshwater Fisheries Act, 1975	
The Act lays down the present basic legal framework within which salmon and freshwater fisheries in England are regulated. Proposals have been made to extend the legislation to apply to more fish species e.g. coarse fish, eel and lamprey species. These proposals are currently under review. The Act covers legislation on fishing methods and related offences, obstructions to fish passage, salmon and freshwater fisheries administration and law enforcement. Proposed extensions to the legislation (under review) include the provision of fish passes and screening of water abstraction and discharge points for coarse fish, eel and lamprey species.	The Act provides statutory requirements for maintaining fish passage. The SEA will cover fish passage as an element of at least one sustainability objective. The SEA should seek to address any potential issues or effects on existing measures to address fish passage.
HM Treasury Infrastructure UK (2010) *National Infrastructure Plan*	
The Plan focuses on economic infrastructure: the networks and systems in energy, transport, digital communication, flood protection, water and waste management. These are all critical to support economic growth through the expansion of private sector businesses across all regions and industries, to enable competiveness and to improve the quality of life of everyone in the UK. The Government's vision for major infrastructure investment in the UK includes : • meeting future challenges in providing sustainable access to water for everyone; • protecting the economy from the current and growing risk of floods and coastal erosion and • reducing waste and improving the way it is treated.	The DP could result in the production of additional waste. The SEA should seek to reduce the production of waste and ensure it is treated in line with the widely adopted 'waste hierarchy' and not sent to landfill.
UKTAG on the WFD *e.g. Development of Environmental Standards (Water Resources) Stage 3 WFD48, SNIFFER, 2006*	
UKTAG prepares technical guidance designed to facilitate	The SEA should seek to ensure that the guidance provided by the plan are

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
consistent implementation of the WFD in the UK. This Plan addresses improving water resource environmental standards covering abstraction and impoundments for rivers and lakes involving a more comprehensive and ecologically driven set of parameter required to deliver the WFD and other regulations. Guidance includes: Typology guidance for rivers and transitional waters Categorisation of heavily modified and artificial waterbodies Type-specific reference conditions for surface waterbody types, identifying the conditions leading to status bands, including biological, hydro-morphological and physico-chemical quality elements Guidance supporting the definition of pressures and impacts and assignment of waterbodies to risk categories Classification tools and methods to support monitoring of status.	considered when assessing the DP, especially with respect to objectives relating to ecology, water quality and water quantity. The SEA should also ensure the guidance in the plan is used in relation to other related regulations for example the Habitats Directive. The guidance could contribute to the formulation of any criteria for assessing significance of effects.
UK Climate Projections UKCP09. UKCIP, 2009	
The UKCP09 Projections provide a basis for studies of impacts and vulnerability and decisions on adaptation to climate change in the UK over the 21st century. Projections are given of changes to climate, and of changes in the marine and coastal environment; recent trends in observed climate are also discussed. The methodology gives a measure of the uncertainty in the range of possible outcomes; a major advance beyond previous national scenarios The Projections will allow planners and decision-makers to make adaptations to climate change. In order to do so they need as much good information as possible on how climate change will evolve. They are one part of a UK government programme of work to put in place a new statutory framework on, and provide practical support for, adaptation.	The DP does take account of UKCP09 projections as its formulation through the DP process which takes account of climate change in its supply and demand projections. The SEA should also use UKCP09 projections in the broader assessment of climate change effects and any potential cumulative effects. For example the ecological requirements of aquatic habitats that may be affected by the DP will also be influenced by climate change.
Environment Agency (undated) WFD River Basin Characterisation Project: Technical Assessment Method - River abstraction and flow regulation	
This paper describes the method used to assess the likelihood of river waterbodies achieving the relevant WFD objectives as a result of artificial influences on low river flows.	Implementation of the DP may impact river water quality. The SEA should seek to promote the protection and enhancement of biodiversity and river water quality across the region.
Environment Agency (undated) Hydroecology: Integration for modern regulation	
This paper describes clear way forward in terms of hydroecology and a strategic direction to its development and application.	The DP and SEA should ensure relevant ecological considerations are integral to water resource evaluation and

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
	management decisions across the range of temporal and spatial scales.
Countryside Council for Wales (CCW) (2003) *Priority Habitats of Wales*	
Gives information about Wales' priority habitats, as identified by UK Biodiversity Action Plans.	The DP and SEA objectives will need to consider the protection of priority habitats.
Welsh Government (2012) Sustaining a Living Wales: A Green Paper on a new approach to natural resource management in Wales	
Welsh Assembly Government (2012) *Energy Wales: A Low Carbon Transition*	
The overall objective is to enhance the economic, social and environmental wellbeing of the people and communities of Wales, through creating a sustainable, low carbon economy for Wales. This will be achieved through: Engaging and supporting businesses that help achieve the low carbon ambition; Ensuring regulatory processes are simplified and efficient; Ensuring there is a framework available to support the transition to a low carbon economy; Supporting energy intensive industries in the transition to a low carbon economy; Pursue energy efficiency so that more can be done with less; Focus on low carbon sources of energy generation and approaches; Assist the most vulnerable by working to ensure that the costs of reform do not fall disproportionately on poor households; and Make the most sustainable use of Wales' resources.	The DP involves options with power requirements and should seek to promote energy efficiency, as well as seeking to reduce the effects of climate change through greenhouse gas emissions. The SEA should also promote the use of renewable energy, where relevant.
Welsh Assembly Government (2012) Planning Policy Wales (Edition 5, 2012)	
Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Assembly Government). It is supplemented by a series of Technical Advice Notes (TANs). TANs important to the SEA of the DP are detailed separately below. PPW provides the policy framework for the effective preparation of local planning authorities' development plans. PPW and the Wales Spatial Plan (see below) should be taken into account in the preparation of development plans.	The DP must consider the PPW and the SEA must ensure the PPW is reflected in an integrated way.
Welsh Assembly Government (2011) *Flood and Coastal Erosion Risk Management Strategy for Wales*	
The strategy has been prepared as a requirement of the Flood and Water Management Act 2010. In light of the evidence of increasing flood risks shown in this report, WAG began to change its approach to flooding and coastal erosion in Wales, moving from a defence dominated approach to one based on the principles of risk management as outlined by four overarching objectives WAG has committed to delivering:	The DP must consider the potential for effects on flood risk. The SEA should seek to ensure that flood risk in the region is not adversely affected by the implementation of the DP and that water supplies across the region are maintained.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
• Reducing the impacts on individuals, communities and businesses from flooding and coastal erosion. • Raising awareness of and engaging people in the response to flood and coastal erosion risk. • Providing an effective and sustained response to flood and coastal erosion events. • Prioritising investment in the most at risk communities.	
Welsh Assembly Government (consultation document 2010) Natural Environment Framework *"A Living Wales: a new framework for our environment, our countryside and our seas"*	
This consultation document sets out the new approach to managing land, water and seas. It also shows how WAG is actively responding to the failure to meet the 2010 biodiversity targets. The document sets a broad direction of travel for future work.	The DP and SEA must consider the impacts of the DP on potential water resources. SEA objectives must address issues of biodiversity and nature conservation.
Welsh Assembly Government (2010) State of the Environment Report – Wales (updated 2011)	
This bulletin presents an overview of progress against the Welsh Assembly Government's Environment Strategy. It summarises the latest information on the indicators monitoring the progress. The results for individual indicators are presented in a series of electronic reports.	The DP must support the commitment to sustainable use of water resources, minimisation of pollution and impact on the environment. The SEA should reflect sustainability indicators and targets set out in the Environment Strategy for Wales.
Welsh Assembly Government (2008*) Wales Spatial Plan*	
The Wales Spatial Plan provides the framework for future collaborative action between the Welsh Assembly Government and its partners to achieve sustainable economic growth across the whole of Wales. The plan emphasises the need for coordinated action at national, regional and local levels. The Spatial plan sets out a range of objectives under five headings: Building sustainable communities Promoting a sustainable economy Valuing our environment Achieving sustainable accessibility Respecting distinctiveness	The DP should ensure the sustainable management of water resources. SEA objectives should reflect and consider relevant objectives from the Wales Spatial Plan.
Welsh Assembly Government (2009) *One Wales: One Planet – a new sustainable development scheme for Wales*	
One Wales One Planet sets out proposals to promote sustainable development and how WAG will make sustainable development a reality for people in Wales, and outlines the benefits that people will see from this, particularly in less well-off communities.	The DP should consider effects of options on sustainable development in Wales. The SEA should include objectives relating to improving resource efficiency, reducing waste, and encouraging sustainability.
Welsh Assembly Government (2010) *Climate Change Strategy for Wales*	
Climate Change Strategy and associated Delivery Plans confirm WAG's commitment to tackling issues of future climate change.	The DP does take account of the Climate Change Strategy and its targets as its

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
Strategy addresses: The vision for 2050, and how this Strategy supports our Sustainable Development Scheme, One Wales: One Planet. Key target to cut greenhouse gas emissions by 3% per year in areas of devolved competence Climate change impacts for Wales. How to tackle Wales's climate vulnerability.	formulation through the DP process takes account of climate change in its supply and demand projections. The SEA should also use the targets in the broader assessment of climate change effects and any potential cumulative effects. For example the ecological requirements of aquatic habitats that may be affected by the DP will also be influenced by climate change.
Welsh Assembly Government (2011) *Strategic Policy Position Statement on Water*	
In March 2009, the first Strategic Policy Position Statement on Water was published. The Policy Statement outlined WAG priorities for water. The Statement contained key issues and actions to be taken. This revised Statement updates the current position. It reflects developments that have happened and highlights future priorities in relation to water policy in Wales.	The DP includes options located in Wales. The SEA should seek to promote the protection and enhancement of all water resources. The SEA should seek to maintain, protect and improve water quality across the region and ensure efficient use of resources.
Welsh Assembly Government (2009) Technical Advice Note 5. Nature Conservation and Planning	
The TAN provides advice for local planning authorities on: The key principles of positive planning for nature conservation; Nature conservation and Local Development Plans; Nature conservation in development management procedures; Development affecting protected internationally and nationally designated sites and habitats; Development affecting protected and priority habitats and species.	The DP may include schemes which at project planning stage would need to be considered in the light of provisions of TAN 5. The SEA process will assess schemes in the context of the provisions of TAN5, particularly where relevant to protected species and habitats.
Welsh Assembly Government (2009) Technical Advice Note 1 Minerals	
The overall aim of planning for aggregates provisions is to ensure supply is managed in a sustainable way so that the best balance between environmental, economic and social considerations is struck, while making sure that the environmental and amenity impacts of any necessary extraction are kept to a level that avoids causing demonstrable harm to interests of acknowledged importance	The DP may include options in Wales which require construction and provision of aggregates, in which case the provisions of the TAN will apply. The SEA process will encourage the sustainable use of aggregates and waste materials.
Welsh Assembly Government (2010) Towards Zero Waste	
Towards Zero Waste has been developed to meet the following challenges: Sustainability - to develop sustainably by enhancing the economic, social and environmental wellbeing of people and communities. Ecological footprint - Ecological footprinting measures environmental impact. The management of waste is responsible for around 15% of Wales' ecological footprint. Climate Change - the need to reduce the greenhouse gas emissions produced from waste. Direct emissions are produced by the decomposition of biodegradable waste in landfill sites. Waste contributes around 4.7% of direct greenhouse gas emissions in	The SEA process will seek to ensure that waste production is minimised and that materials are reused and recycled where appropriate.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
Wales. Security of resources - the need to ensure enough resources, at an affordable price, to sustain the economy and way of life. By using resources more efficiently through waste prevention and high reuse and recycling rates, material security is improved and dependence on primary resources from outside the UK is reduced.	
Welsh Assembly Government (2004) Technical Advice Note 15 Development and Flood Risk	
This document provides advice on: Development advice maps; Nature of development or land use; Justifying the location of built development; Assessing flooding consequences; Surface water run-off from new development; Action through Development Plans; Development Control.	The SEA process will seek to ensure that appropriate provisions are made to effectively manage flood risks that could be brought about through the DP.
Welsh Assembly Government (2008) Rural Development Plan 2007-2013. Bringing Opportunities to Wales	
The Rural Development Plan (RDP) for Wales 2007-2013 covers four areas of activity. These are: agriculture and forestry environment and countryside quality of life in rural areas locally based approaches to rural development It aims to tackle specific problems such as low wages which affect rural areas. Funding has been provided to enact the Plan, and monitoring systems have been set up to ensure lessons are learned from its implementation and to share best practice with other European countries. The RDP funds GLASTIR - a new agri-environment scheme for Wales with environmental objectives.	The DP may affect rural areas in Wales. The SEA will consider impacts on recreation and tourism opportunities, and would encourage sustainable land management.
Welsh Assembly Government (2005) *Technical Advice Note 8: Renewable Energy*	
This TAN provides advice on: Renewable energy and planning; Onshore renewable energy technologies; Design and energy; Implications for development plans; Development control; and Monitoring.	The DP involves options with power requirements. The SEA should also promote the use of renewable energy, where relevant.
Welsh Assembly Government (2001) *Technical Advice Note 21: Waste*	

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
The technical advice note is intended to facilitate the introduction of a comprehensive, integrated and sustainable land use planning framework for waste management in Wales. It provides advice on: Planning framework in Wales; Regional co-ordination in Wales; Principles and techniques; Planning considerations in waste issues; Unitary development plans; Development control; and Types of waste.	The DP could result in the production of additional waste and will involve resource use both during construction and operation. The SEA should seek to prevent or reduce the production of waste and ensure resources are used efficiently and sustainably.
Welsh Assembly Government (2006) *The Environment Strategy for Wales*	
The Environment Strategy for Wales recognises the importance of the Welsh environment and explains how the challenges facing it over the next 20 years will be tackled. The Environment Strategy provides the framework within which to achieve an environment which is clean, healthy, biologically diverse and valued by the people of Wales.	The DP options may result in deterioration of the physical environment therefore the SEA should consider the points made within the framework to minimise any potential negative environmental impact.
Welsh Assembly Government (2008) *Welsh Soils Action Plan*	
The need for an action plan was identified in the Welsh Assembly Government's Environment Strategy for Wales 3. Action 42 made a commitment to developing a soil action plan, which focused on: • Good soil management in agriculture and forestry • The integration of soil protection into guidance on land-use planning policy and its implementation • The development of an appropriate set of indicators for soils in Wales • Working with the Countryside Council for Wales (CCW) and the Environment Agency (EA) to ensure wastes and pollutants deposited on land historically or currently do not impair long term soil functions • A risk-based approach to managing soil resources • The promotion of education and access to information on soil This Action Plan reviews the importance of soils for Wales in economic, environmental and social terms. It outlines the main threats to soils in Wales, considers current policies and proposes actions to combat or mitigate threats.	The DP options may impact upon soils therefore the SEA should consider the points made within the action plan to minimise any potential negative environmental impact and negative impacts upon soils.
Welsh Assembly Government (2010) *Low Carbon Revolution – The Welsh Assembly Government Energy Policy Statement*	
This Policy Statement sets out the Welsh Assembly Government's ambitions for low carbon energy in Wales. The statement builds on the results of their consultations on the Renewable Energy Route Map and the Bioenergy Action Plan for Wales. It draws on the work of the Wales Climate Change Strategy, the National Energy Efficiency and Savings Plan, the Green Jobs Strategy and	The SEA should seek to implement the aims and objectives of the Energy Policy Statement within the DP options to ensure that cumulative impacts arising from increased energy usage etc. are minimised accordingly.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
the Ministerial Advisory Group on Economy and Transport's report on "The Energy Sector". This statement also reflects the UK policy position, the work of the UK Climate Change Commission and the UK National Policy Statements on Energy and Renewables.	
Welsh Assembly Government (2010) *Natural Environment Framework "A Living Wales: a new framework for our environment, our countryside and our seas"*	
This framework sets out the new approach to managing land, water and seas. It also shows how WAG is actively responding to the failure to meet the 2010 biodiversity targets. The document sets a broad direction of travel for future work.	The DP and SEA must consider the impacts of the DP on potential water resources. SEA objectives must address issues of biodiversity and nature conservation.
Welsh Assembly Government GLASTIR – *Agri-environment scheme funded under the Rural Development Plan*	
GLASTIR has replaced the existing agri-environment schemes within Wales. Glastir pays for the delivery of specific environmental goods and services aimed at: • Combating climate change; • Improving water management • Maintaining and enhancing biodiversity. It is designed to deliver measurable outcomes at both a farm and landscape level in a cost effective way.	The SEA should seek to consider the impacts of the DP on the environment and potential water resources. SEA objectives must address issues of biodiversity and nature conservation that are outlined within GLASTIR
Cabinet Office (2001), *National Strategy Action Plan for Neighbourhood Renewal*	
The National Strategy Action Plan for Neighbourhood Renewal was produced on the vision that, within 10 to 20 years, no-one should be seriously disadvantaged by where they live. People on low incomes should not have to suffer conditions and services that are failing, and so different from what the rest of the population receives. The vision is reflected in two long-term goals: • In all the poorest neighbourhoods, to have common goals of lower worklessness and crime, and better health, skills, housing and physical environment. • To narrow the gap on these measures between the most deprived neighbourhoods and the rest of the country.	The DP could result deterioration of the physical environment therefore the SEA should seek to minimise environmental impact in potentially deprived areas
DCMS Ancient Monuments and Archaeological Areas Act (1979)	
An act to consolidate and amend the law retain to ancient monuments, to make provision of matters of archaeological or historic interest, and to provide grants by secretary of state to the Architectural Heritage fund.	The DP and SEA should consider and take account of any potential impacts to heritage landscapes and assets.
Defra (2007), *England Biodiversity Strategy – Towards Adaptation to Climate Change*	
Biodiversity Strategy sets out principles to guide adaptation to climate change. It is aimed at people responsible for planning and delivering actions across all sectors identified in the England	The DP and SEA should consider and take account of any potential impacts to biodiversity and should consider the

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
Biodiversity Strategy: agriculture, water and wetlands, woodland and forestry, towns, cities and development, coasts and seas.	contents of the Biodiversity Strategy to minimise potential impacts.
Defra (2009), *Consultation on modernisation of salmon and freshwater fisheries legislation; new order to address the passage of fish*	
Defra consultation on new regulatory order to address the passage of fish (for Water Framework Directive and EU Eel Regulation)	The DP and SEA should consider and take account of any potential impacts to the passage of fish and should consider the contents of the Defra legislation to minimise potential impacts.
Defra (2005), *Conservation of Habitats and Species Regulations 2010*	
Updated legislation transposing the Habitats Directive into national law. Consolidate all the many amendments which have been made to the Regulations since they were first made in 1994.	See under Habitats Directive
Defra (2002), *The Strategy for Sustainable Farming and Food – Facing the Future*	
The strategy builds on the invaluable work conducted by the Policy Commission on the Future of Farming and Food. It sets out how industry, Government and consumers can work together to secure a sustainable future for our farming and food industries, as viable industries contributing to a better environment and healthy and prosperous communities.	The implementation of the DP may have some indirect links with the food industry, through ensuring the availability of water for food based activities. The SEA should also seek to promote the most effective use of the region's natural resources, including soil, biodiversity and energy resources.
Environment Agency (2012), *Living Waters for Wales*	
EA Wales are targeting water bodies to achieve 50% at Good Ecological Status/Potential by 2015 and have developed "Living Waters for Wales – communicating our approach" to focus on the Top 10 issues causing WFD failures and the solutions that will deliver improvements.	The DP should support and maintain good ecological status of water bodies. The SEA objectives should seek to address these top 10 issues; agricultural pollution, artificial barriers to fish migration, abandoned mines & contaminated land, forestry, acidification, sewage discharges, impoundments, flood protection & land drainage, urban & transport development, surface water abstractions.
Environment Agency (2010), *Water Resources Action Plan for England and Wales*	
The strategy has four main aims: Adaptation to and mitigation of climate change; A better water environment; Sustainable planning and management of water resources; People valuing water and the water environment.	There is considerable links between the core themes of the strategy and the DP. The SEA should seek to ensure that strategy objectives are also reflected in the SEA objectives particularly regarding the sustainable management of water resources and protecting the environment.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
Environment Agency (undated) *WFD River Basin Characterisation Project: Technical Assessment Method - River abstraction and flow regulation*	
This paper describes the method used to assess the likelihood of river water bodies achieving the relevant WFD objectives as a result of artificial influences on low river flows.	Implementation of the DP may impact river water quality. The SEA should seek to promote the protection and enhancement of biodiversity and river water quality across the region.
HM Government (2011), *The Natural Choice: securing the value of nature. The Natural Environment White Paper*	
Addresses the Government's approach to valuing economic and social benefits of a healthy natural environment while continuing to recognise nature's intrinsic value. It describes the vision of the Government for this to be the first generation to leave the natural environment of England in a better state than it inherited, requiring placing the value of nature at the heart of decision-making – in Government, local communities and businesses. Approaches to mainstream the value of nature across society include: • facilitating greater local action to protect and improve nature; • creating a green economy, in which economic growth and the health of our natural resources sustain each other, and markets, business and Government better reflect the value of nature; • strengthening the connections between people and nature to the benefit of both; and • showing leadership in the European Union and internationally, to protect and enhance natural assets globally	The DP supports the provisioning service of freshwater through ensuring security of supply. Other related ecosystem services may include: • Provisioning Services: Biodiversity • Regulating Services: Water Regulation • Cultural services: Recreation and ecotourism • Cultural services: Cultural heritage values • Cultural services: Aesthetic The SEA should ensure the DP effects the related provisioning services in the least damaging way through informing the DP formulation and selection of options.
ODPM (2000), *Urban White Paper: Our Towns and Cities*	
This white paper seeks to address the economic, technological, environmental and social challenges faced by our cities and towns. An on-going study of the social and economic performance of the major cities of England, sponsored by the Communities and Local Government department of the United Kingdom Government.	The DP should consider and take account of any potential impacts to environmental challenges faced by towns and cities. The SEA should seek to promote environmental protection and enhancement of biodiversity and river water quality in towns and cities.
ODPM (2003), Sustainable Communities Plan – Building for the Future	
The Sustainable Communities Plan sets out a long-term programme of action for delivering sustainable communities in both urban and rural areas. It aims to tackle housing supply issues and the quality of our public spaces. The Plan includes not just a significant increase in resources and major reforms of housing and planning, but a new approach to how we build and what we build. It holds a range of policies and plans which are in effect a spatial plan for the whole of England.	The DP may affect sustainable water supplies to these communities. The SEA should seek to minimise environmental impact and promote and maintain sustainable communities.
Planning (Listed Building and Conservation Area) Act (1990)	

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
An Act to consolidate certain enactments relating to special controls in respect of buildings and areas of special architectural or historic interest with amendments to give effect to recommendations of the Law Commission.	The DP options may have a negative impact upon historical listed buildings and/or designated conservation areas therefore the SEA should seek to predict and minimise possible impacts. Best construction practices should also be promotes to ensure that disruption is minimised.
Regional	
In September 2004 ASERA launched the management scheme for the Severn Estuary SPA European Marine Site. All ASERA member statutory organisations annually review their activities and the potential for them to impact on the designated birds and habitats of the estuary. They work collectively and with user groups to raise awareness of the nature conservation designations, and how users can help minimise their impact on the birds and habitats.	The DP should consider and take account of any potential impacts to the Severn Estuary Marine Site The SEA should seek to promote environmental protection and enhancement of biodiversity whilst minimising the potential impact to birds and marine life.
Association of Severn Estuary Relevant Authorities (2004), *Severn Estuary Management Scheme*	
The strategy for the Severn Estuary is to bring together all those involved in the development, management and use of the Estuary within a framework which encourages the integration of their interests and responsibilities to achieve common objectives. Key objectives include: • Create mechanisms and provide opportunities for improving communication, understanding and cooperation between managing agencies, users and local people; • Encourage and facilitate partnerships between all those involved in management or with an interest in the Estuary; • Provide a flexible and supportive service to all those involved in management or with an interest in the Estuary; • Be a focal point for research and information about the Estuary; • Review existing information on the Severn Estuary, identify what further information is required to inform future management, provide an information based service and be a forum for information exchange; • Highlight examples of good and bad practice and assist in disseminating this information; • Co-ordinate and report on a programme of projects as identified in the Partnership's Action Plans; • Encourage organisations to adopt policies that are complementary to each other and relate to policies	The DP should consider and take account of any potential impacts to the Severn Estuary Site The SEA should seek to advise the DP options on possible impacts to the Severn Estuary, promote environmental protection and enhancement of biodiversity whilst minimising the potential impact to birds and marine life.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
outlined in the Strategy for the Severn Estuary.	
Welsh Assembly Government (2001) *Technical Advice Note 21: Waste*	
The technical advice note is intended to facilitate the introduction of a comprehensive, integrated and sustainable land use planning framework for waste management in Wales. It provides advice on: • Planning framework in Wales; • Regional co-ordination in Wales; • Principles and techniques; • Planning considerations in waste issues; • Unitary development plans; • Development control; and • Types of waste.	The DP could result in the production of additional waste and will involve resource use both during construction and operation. The SEA should seek to prevent or reduce the production of waste and ensure resources are used efficiently and sustainably.
Environment Agency Wales (2012), *Drought Plan*	
The Environment Agency is responsible for securing the proper use of water resources in England and Wales and making sure there is enough water available for all needs including the environment. This is achieved by regulating the abstraction of water, monitoring the environment and working closely with the water industry and other abstractors to manage resources. During droughts the Environment Agency of Wales monitor and report on the impacts on the environment, monitor water company actions to confirm they are following their drought plans and determine drought permit applications. Water companies are responsible for developing and maintaining an efficient and economical system for public water supply in their area, without damaging the environment or affecting the needs of other water users. During a drought they will take actions to maintain public water supplies, as set out in their drought plans, whilst minimising any impacts on the environment.	The DP includes options that have the potential to impact on water availability. The SEA should consider the full range of impacts that changes to abstractions could have upon water availability and advise upon expectations in times of drought.
Environment Agency Wales (2009), *Habitats Directive Review of Consents River Usk SAC Appropriate Assessment*	
The Appropriate assessment could not conclude no adverse effect upon site integrity due to the in-combination effects of licensed abstractions on the quantity and variability of river flows and fish entrainment at abstraction intakes. The maintenance of river flows is important to support the life stages of designated feature and that the in-combination effects of abstraction are particularly evident during low flows in the River Usk.	The DP includes options that have the potential to impact on water availability in the River Usk SAC. The SEA should consider the full range of impacts that changes to abstractions could have on the River Usk SAC.
Environment Agency Wales (2010), *Habitats Directive Review of Consents River Usk SAC Site Action Plan*	
This Site Action Plan contains the options appraisal and conclusions of the River Usk RoC. The preferred option is to maintain the "Combined RFO" by modifying four abstraction licences in the Usk catchment. Screening conditions will also be added to three of these licences to prevent fish entrainment.	The DP includes options that have the potential to impact on water availability in the River Usk SAC. The SEA should consider the full range of impacts that changes to abstractions

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
	could have on the River Usk SAC.
Environment Agency Wales (2009), *Habitats Directive Review of Consents River Wye SAC Appropriate Assessment*	
The RoC Appropriate Assessment could not conclude no adverse effect upon site integrity due to the in-combination effects of licensed abstractions on the quantity and variability of river flows in the River Wye throughout the year. The maintenance of river flows is important to support the life stages of designated features. The incombination effects of abstraction are particularly evident during low flows in the lower Wye and in the Lugg tributary.	The DP includes options that have the potential to impact on water availability in the River Wye SAC. The SEA should consider the full range of impacts that changes to abstractions could have on the River Wye SAC.
Environment Agency Wales (2010), *Habitats Directive Review of Consents River Wye SAC Site Action Plan*	
This Site Action Plan contains the options appraisal and conclusions of the River Wye RoC. The preferred option to maintain the Habitats Directive Ecological River Flow in the lower Wye is to modify 81 abstraction licences in the Wye catchment.	The DP includes options that have the potential to impact on water availability in the River Wye SAC. The SEA should consider the full range of impacts that changes to abstractions could have on the River Wye SAC.
Environment Agency Wales (2009), *Habitats Directive Review of Consents Severn Estuary SAC and SPA Appropriate Assessment*	
• The RoC Appropriate Assessment concluded the SAC interest features where it was not possible to reach a conclusion of no adverse effect on the site integrity were: Estuarine and Intertidal habitats – estuaries, intertidal mudflats and sandflats not covered by seawater at low tide anadromous fish - twaite shad (*Alosa fallax)*, sealamprey (*Petromyzon marinus)*, river lamprey (*Lampetra fluviatilis)*	The DP includes options that have the potential to impact on water availability and water dependant features in the Severn Estuary SAC and SPA. The SEA should consider the full range of impacts that changes to abstractions could have on the biological features of the site.
Environment Agency Wales (2010), *Habitats Directive Review of Consents Severn Estuary SAC and SPA Site Action Plan*	
This Site Action Plan contains the options appraisal and conclusions of the Severn Estuary RoC. The main concerns are focused on the estuary feature and anadromous (migratory) fish.	The DP includes options that have the potential to impact on water availability and water dependant features in the Severn Estuary SAC and SPA. The SEA should consider the full range of impacts that changes to abstractions could have on the biological features of the site.
Defra (2010) Eel Management plans for the United Kingdom: Humber River Basin District	
This Eel Management Plan for the Humber River Basin District (RBD) aims to describe the current status of eel populations, assess compliance with the target set out in Council Regulation No 1100/2007 and detail management measures to increase silver eel escapement. This will contribute to the recovery of the stock of	The DP may affect the passage of eels. The SEA should seek to should seek to address migratory fish species and their migratory passage.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
European eel. The Humber RBD has an escapement target of 40%. The main anthropogenic issues thought to be affecting eel populations in the Humber RBD are: • Barriers to migration • Entrainment and impingement • Wide-scale loss of habitat	
Defra (2010) Eel Management plans for the United Kingdom: Severn River Basin District	
This Eel Management Plan for the Severn River Basin District (RBD) aims to describe the current status of eel populations, assess compliance with the target set out in Council Regulation No 1100/2007, and detail management measures to increase silver eel escapement. This will contribute to the recovery of the stock of European eel. The Humber RBD has an escapement target of 40%. The main anthropogenic issues thought to be affecting eel populations in the Severn RBD are: • Barriers to migration • Entrainment and impingement • Wide-scale loss of habitat Predation	
Defra (2010), *Noise Action Plan (NAP) West Midlands Agglomeration*	
The Action Plan is designed to address the management of noise issues and effects in the West Midlands agglomeration. In particular it covers the noise issues arising from road, railway, aviation and industrial sources. The Action Plan is confined to the noise sources mentioned and does not affect the management of noise from any other sources. The Action Plan aims to promote good health and good quality of life. The NAP is in sections covering each particular noise source. Each of these includes information on the current approach to noise management; a summary of the noise-mapping results; identification of problems and situations to be investigated; noise reduction measures already in force and any projects in preparation; actions the competent authority intends to take and the long term strategy for noise from the specific source.	The implementation of the DP options may have some influence on noise issues, either directly or indirectly through construction or operation activities. The WRMP and SEA should seek to ensure that noise levels are reduced during the plan period and aim to promote good health and good quality of life with respect to noise.
Environment Agency (2011), *Water Resources Strategy – A Regional Action Plan for Midlands Region.*	
Explains how the aims of the Environment Agency national strategy will be progressed by regional teams. Brings a sustainable approach to water management, taking into account	The DP may have an effect on some of the regional action plan's objectives. The SEA should include objectives that take into account the objectives of the

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
regional challenges. This plan takes the aims and objectives of the strategy and identifies regional actions that will enable: • water to be abstracted, supplied and used efficiently • the water environment to be restored, protected and improved so that habitats and species can better adapt to climate change • supplies to be more resilient to the impact of climate change, including droughts and floods • water to be shared more effectively between abstractors • improved water efficiency in new and existing buildings • water to be valued, and for prices to act as an incentive for efficient use, while safeguarding vulnerable sectors of society • additional resources to be developed where and when they are needed in the context of a twin-track approach with demand management • sustainable, low-carbon solutions to be adopted • stronger integration of water resources management with land, energy, food and waste.	regional action plan where relevant.
Severn Estuary Partnership, *State of the Severn Estuary*	
The State of the Severn Estuary is set to be the first in a series that reports on the state of and changes in the natural and human environment of the Severn Estuary, establishing baseline data in the context of climate and other coastal change.	The DP has the potential to cause adverse impacts upon the Severn Estuary therefore the SEA should seek to advise the DP upon the current state of the Severn Estuary and ensure that proper environmental monitoring is utilised to minimise possible impacts.
Yorkshire Water (2012), *Draft Drought Plan.*	
This plan was devised from the extensive drought contingency planning experience gained in Yorkshire over recent years. It looks at the management of water resources to maintain service to customers during drought. The plan includes: Water resource planning Water resource management and monitoring Communication during drought Drought management actions	Assessment of the potential for cumulative impacts of supply side and drought permit/order options with drought options listed in neighbouring water companies' drought plans has been undertaken. The assessments should be reviewed at the time of drought option implementation to ensure that no changes to the neighbouring water company drought option has been made in the intervening period, and that the assessment, therefore, remains valid.
South Staffordshire Water (2007), *Final Drought Plan*	
This plan is an update for 2003 plan and it reflects recent activity and initiatives to build on the ability to manage water resources	Assessment of the potential for cumulative impacts of supply side and drought permit/order options with

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
and to maintain service to customers in droughts. The supply and demand management options available during a drought are discussed, together with an assessment of the risks associated with these options. The triggers that initiate actions are also discussed together with the makeup of the Drought Action Team that will be responsible for decision making as drought develops, and for standing down actions in its aftermath.	drought options listed in neighbouring water companies' drought plans has been undertaken. The assessments should be reviewed at the time of drought option implementation to ensure that no changes to the neighbouring water company drought option has been made in the intervening period, and that the assessment, therefore, remains valid.
Anglian Water (2012), *Draft Drought Plan.*	
Anglian Water's Drought Plan 2012 has been produced to comply with the statutory requirements introduced in the Water Act 2003, the Drought Plan Direction 2011 and Environment Agency guidelines. The purpose of the plan is to demonstrate how Anglian water will protect public water supplies during a drought, whilst minimising any potential environmental impacts that may arise as a result of those activities.	Assessment of the potential for cumulative impacts of supply side and drought permit/order options with drought options listed in neighbouring water companies' drought plans has been undertaken. The assessments should be reviewed at the time of drought option implementation to ensure that no changes to the neighbouring water company drought option has been made in the intervening period, and that the assessment, therefore, remains valid.
Bristol Water (2011), *Draft Drought Plan.*	
The report presents actions and measures which Bristol Water intend to deploy during various stages of drought. The plan also sets out the following: Bristol Water drought management strategy. A review of resource monitoring and reporting. A description of triggers used to guide drought management decisions. A review of drought actions which may be used. Bristol Waters communications plan Drought Management Area descriptions and how demand is expected to change which may require the implementation of any of the drought actions.	Assessment of the potential for cumulative impacts of supply side and drought permit/order options with drought options listed in neighbouring water companies' drought plans has been undertaken. The assessments should be reviewed at the time of drought option implementation to ensure that no changes to the neighbouring water company drought option has been made in the intervening period, and that the assessment, therefore, remains valid.
United Utilities (2008) *Final Drought Plan*	
The report provides an update of United Utilities 2003 plan and incorporates experience gained from maintaining water supplies during the 2003 drought. The supply and demand management options available during a drought are discussed, together with an assessment of the risks associated with these options as well as the triggers that initiate actions.	Assessment of the potential for cumulative impacts of supply side and drought permit/order options with drought options listed in neighbouring water companies' drought plans has been undertaken.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
	The assessments should be reviewed at the time of drought option implementation to ensure that no changes to the neighbouring water company drought option has been made in the intervening period, and that the assessment, therefore, remains valid.
Dwr Cymru Welsh Water (2009) *Final Drought Plan*	
[Not available for review – not yet approved for publication]	
United Utilities, *Final Water Resources Management Plan 2010-2035* (2009)	
United Utilities' statutory WRMP under the Water Act, 2003. Sets out plans to manage supply and demand for water in relevant water supply zones, while protecting the environment over a 25-year period. Includes SEA.	The DP may have an effect on some of the other water suppliers DPs within the regions. The SEA should include objectives that take into account the objectives and policies from other DPs within the region where relevant.
Thames Water (2012) *Final Water Resources Management Plan 2010-2035*	
Thames Water's statutory WRMP under the Water Act, 2003. Sets out plans to manage supply and demand for water in relevant water supply zones, while protecting the environment over a 25-year period. Includes SEA.	The DP may have an effect on some of the other water suppliers DPs within the regions. The SEA should include objectives that take into account the objectives and policies from other DPs within the region where relevant.
Dwr Cymru Welsh Water (2011) *Revised Draft Water Resources Management Plan 2010-2035*	
Welsh Water' statutory WRMP under the Water Act, 2003. Sets out plans to manage supply and demand for water in relevant water supply zones, while protecting the environment over a 25-year period. Includes SEA and HRA. The 2009 draft WRMP was revised to incorporate assessment against the Habitats Directive and updated climate change predictions. The key elements of the overall strategy can be summarised as follows: • Leakage reduction at current levels • Promotion of a wide range of water efficiency activities for both our domestic and business customers • Installation of water meters at all new properties and those households who opt to be metered • for Pembrokeshire, where the deficit has been driven by the potential impacts of climate change and the significant impact of sustainability reductions being proposed by the Environment Agency, reinstatement of a currently licence-exempt groundwater source and carry out a network scheme that will enhance the connectivity of the zone. This is the most economic solution for the zone; • in the Brecon – Portis water resource zone where the Environment Agency wants us to reduce our abstractions from the River Usk at Brecon supplement the available flow in the river with additional releases from the Usk reservoir, when required; • in the South East Wales Conjunctive Use System zone, where the effects of the Agencys review of our abstractions on the protected habitats in the Wye and the Usk must be addressed, plus the effects of climate change on Deployable Output. DCWW plan to reinstate	The WRMP may have an effect on some of the other water suppliers WRMPs within the regions. The SEA should include objectives that take into account the objectives and policies from other WRMPs within the region where relevant.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
two reservoirs that have not been used for public water supply for some time, namely Wentwood and Grwyne Fawr, and to build new treatment works for both sources.	
Dee Valley Water (2009) Draft Final *Water Resources Management Plan 2010-2035*	
Dee Valley Water's statutory WRMP under the Water Act, 2003. Sets out plans to manage supply and demand for water in relevant water supply zones, while protecting the environment over a 25-year period. Includes SEA.	The DP may have an effect on some of the other water suppliers DPs within the regions. The SEA should include objectives that take into account the objectives and policies from other DPs within the region where relevant.
Environment Agency (2009) *River Basin Management Plan, Humber River Basin District.*	
Regional plan on ecological quality status of controlled waters and programme of measures (PoM) for improvement in the first river basin management planning cycle 'RBMP1' (2009-2014) prepared by the Environment Agency. The RBMP has been prepared under the WFD, which requires all countries throughout the EU to manage the water environment to consistent standards. The RBMP describes the Humber RBD, and the pressures that the water environment faces. It shows what this means for the current state of the water environment, and what actions will be taken to address the pressures. It sets out what improvements are possible by 2015 and how the actions will make a difference to the local environment. The key issues for waterbody status improvement in the Humber RBD include: point source pollution from water industry sewage works; diffuse pollution from agricultural activities; diffuse pollution from urban sources; physical modification of waterbodies; disused mines, point and /or diffuse pollution source.. At present, because of these pressures, and the higher environmental standards required by the Water Framework Directive, only 18% of surface waters are currently classified as good or better ecological status. 27% of assessed surface waterbodies are at good biological status.	The DP may have an effect on some of the Humber RBMP objectives. The SEA should include objectives that take into account the objectives of the Humber RBMP where relevant (e.g. abstraction and WFD status).

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
Environment Agency (2009) *River Basin Management Plan, Severn River Basin District*.	
Regional plan on ecological quality status of controlled waters and programme of measures (PoM) for improvement in the first river basin management planning cycle 'RBMP1' (2009-2014) prepared by the Environment Agency. The RBMP has been prepared under the WFD, which requires all countries throughout the EU to manage the water environment to consistent standards. The RBMP describes the Severn RBD, and the pressures that the water environment faces. It shows what this means for the current state of the water environment, and what actions will be taken to address the pressures. It sets out what improvements are possible by 2015 and how the actions will make a difference to the local environment. The key issues for waterbody status improvement in the Severn RBD include: • diffuse pollution from agriculture and other rural activities • point source pollution from water industry sewage works • physical modification of waterbodies • diffuse pollution from urban sources. At present, because of these pressures, and the higher environmental standards required by the Water Framework Directive, only 29% of surface waters are currently classified as good or better ecological status. 37% of assessed surface waterbodies are at good biological status..	The DP may have an effect on some of the Severn RBMP objectives. The SEA should include objectives that take into account the objectives of the Severn RBMP where relevant (e.g. abstraction and WFD status).
Environment Agency (2009) *River Basin Management Plan, West Wales River Basin District*	
Regional plan on ecological quality status of controlled waters and programme of measures (PoM) for improvement in the first river basin management planning cycle 'RBMP1' (2009-2014) prepared by the Environment Agency. The RBMP has been prepared under the WFD, which requires all countries throughout the EU to manage the water environment to consistent standards. The RBMP describes the West Wales RBD, and the pressures that the water environment faces. It shows what this means for the current state of the water environment, and what actions will be taken to address the pressures. It sets out what improvements are possible by 2015 and how the actions	The DP may have an effect on some of the West Wales RBMP objectives. The SEA should include objectives that take into account the objectives of the West Wales RBMP where relevant (e.g. abstraction and WFD status).

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
will make a difference to the local environment.	
Environment Agency, *Catchment Flood Management Plans (for relevant catchments)*	
Catchment Flood Management Plans (CFMPs) give an overview of the flood risk across each river catchment. They recommend ways of managing those risks now and over the next 50-100 years. CFMPs consider all types of inland flooding, from rivers, ground water, surface water and tidal flooding, but not flooding directly from the sea, (coastal flooding), which is covered in Shoreline Management Plans. They also take into account the likely impacts of climate change, the effects of how the land is managed, and how areas could be developed to meet present day needs without compromising the ability of future generations to meet their needs. Key Catchment Flood Management Plans include: • River Severn CFMP • Severn Tidal Tributaries CFMP • River Trent CFMP • Wye and Usk • Pembrokeshire and Ceredigion Rivers	
Environment Agency, *Salmon Action Plans (for relevant catchments)*	
A total of 63 plans were being prepared for salmon rivers in England and Wales by 2002 as part of the Agency's National Salmon Management Strategy. The Plans identify and cost a series of actions designed to help safeguard and improve Salmon populations. Relevant catchments include: • River Trent • River Severn and Severn Estuary	The DP options have the potential to influence salmonid waters in the region. The SEA should seek to maintain or enhance the quality of habitats and biodiversity particularly those of Salmon identified in the Action Plans. The SEA will cover fish passage as an element of at least one sustainability objective.
Environment Agency Wales, *Salmon Action Plans (for relevant catchments)*	
The Environment Agency Wales has prepared a series of action plans, based on river catchments, setting out what needs to be done to support and restore salmon populations. A total of 63 plans were being prepared for salmon rivers in England and Wales by 2002 as part of the Agency's National Salmon Management Strategy. The Plans identify and cost a series of actions designed to help safeguard and improve Salmon	The DP options have the potential to influence salmonid waters in the region. The SEA should seek to maintain or enhance the quality of habitats and biodiversity particularly those of Salmon identified in the Action Plans. The SEA will cover fish passage as an element of

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
populations. Relevant catchments include: • River Dee • River Usk • River Dyfi • River Severn	at least one sustainability objective.
Environment Agency *CAMS*	
CAMS are one tool used by the Environment Agency to manage water resources, specifically abstraction, in England and Wales. The Catchment Abstraction Management Strategies (CAMS) relevant to the Severn Trent Water area are as follows: Soar CAMS Lower Trent and Erewash CAMS (replaced Trent Corridor CAMS) Dove CAMS (abstraction from the Dove is used to supply the East Midlands) Idle and Torne CAMS Derbyshire Derwent CAMS Tame, Anker and Mease CAMS Worcestershire Middle Severn CAMS Wye CAMS Severn Vale CAMS Shropshire Middle Severn CAMS Severn Uplands CAMS Warwickshire Avon CAMS Worcestershire Middle Severn CAMS Severn Corridor CAMS Trent Corridor CAMS Shropshire Middle Severn CAMS Teme CAMS Shropshire Middle Severn CAMS Staffordshire Trent Valley CAMS Dove CAMS Weaver and Dane CAMS Meirionnydd CAMS Dee CAMS Welland CAMS Little Avon Cotswolds Don and Rother CAMS. The aims of the CAMS are to:	The DP could affect issues identified within in the individual CAMS within the area. The SEA will include objectives that ensure that the effect of the DP on the CAMS issues are assessed.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
• make information on water resource availability and the catchment licensing strategy more readily available • provide a consistent and structured approach to local water resource management • recognise both the abstractor's reasonable need for water and environmental needs • provide mechanisms to assess water resources availability • provide results which ensure the relevant Water Framework Directive objectives are met • provide tools to aid licence decisions – particularly the block replacement and management of time limited licences.	
Peak District National Park Authority (2012) 20012-2017 *Management Plan*	
The vision of the plan is for a Peak District where the unique beauty of its working landscapes, its wildlife and environment, its tranquillity, cultural heritage and the communities within it, continue to be understood and valued nationally for their diversity and richness. The plan aims to capture the many factors and issues at play and encourage integrated approaches that achieve national park purposes in ways beneficial to all. It also aims to find solutions that make best use of all resources, meet the needs of communities and businesses, and conserve, enhance and increase understanding of the national park's special qualities.	The DP may have the potential to affect several of the principles for managing the Peak District National Park. The SEA will include objectives that take into account the principles of the Peak District National Park management where relevant (e.g. landscape character, geology, cultural heritage and local distinctiveness, biological diversity and ecological systems, climate change and opportunities for people to and explore the area.
Cotswolds AONB Management Plan 2008-2013	
The Countryside and Rights of Way Act (2000) placed a statutory duty on AONB local authorities to produce and review Management Plans that will formulate their policy for the management of the area. The plan is structured around the two statutory purposes of conserving and enhancing the natural beauty of the AONB and improving the understanding and enjoyment of the special qualities of the Cotswolds. The fundamental principles that inform the Board's approach to managing the Cotswolds AONB are: • The implications of climate change for all activities must be addressed. • The landscape of the AONB must be managed in ways that conserve and enhance landscape character, local distinctiveness, geology and geomorphology, historic features, habitats and biological diversity.	The DP may have the potential to affect several of the principles for managing the Cotswolds AONB. The SEA will include objectives that take into account the principles of the Cotswolds AONB management where relevant (e.g. climate change, landscape character, geology, historic features, habitats and biological diversity and opportunities for people to and explore the area.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
• A sustainable approach must be taken to all issues within the AONB, particularly in the development and management of its rural economy. • It is important to increase people's awareness, knowledge and understanding of the qualities of the AONB, and of the opportunities to enjoy and explore the area.	
Cannock Chase AONB (2009) Management Plan 2009 -2014	
The DP may have the potential to affect several of the principles for managing the Cotswolds AONB. The SEA will include objectives that take into account the principles of the Cannock Chase AONB management where relevant (e.g. climate change, landscape character, geology, historic features, habitats and biological diversity and opportunities for people to and explore the area. The plan is based around the following seven high level objectives: • Develop the sense of Cannock Chase AONB as a special place. • Conserve and enhance the distinctive and nationally important landscape and biodiversity of Cannock Chase AONB. • Develop a sense of value for the landscape • Ensure a safe, clean and tranquil environment that can contribute to a high sustainable quality of life. • Support a working landscape to provide prosperity but protects natural wildlife and resources. • Create a place of enjoyment for everyone to contribute to physical and mental well-being. • Maintain and develop a successful working partnership to manage the AONB.	The DP may have the potential to affect several of the principles for managing the Cannock Chase AONB. The SEA will include objectives that take into account the principles of the Cannock Chase AONB management where relevant (e.g. climate change, landscape character, geology, historic features, habitats and biological diversity and opportunities for people to and explore the area.
Malvern Hills AONB (2009) Management Plan 2009 -2014	
The Countryside and Rights of Way Act (2000) placed a statutory duty on AONB local authorities to produce and review Management Plans that will formulate their policy for the management of the area. The plan is structured around the two statutory purposes of conserving and enhancing the natural beauty of the AONB and improving the understanding and enjoyment of the special qualities of the Malvern Hills. The plan is based around the following four key issues: • Integrated management of the AONB to provide sustainability in terms of the local environmental, social and economic issues. • Continued use of sensitive rural land management methods to maintain the character of the AONB and promote biodiversity. • Management of the AONB to reduce Co2 emissions and	The DP may have the potential to affect several of the principles for managing the Malvern Hills AONB. The SEA will include objectives that take into account the principles of the Malvern Hills AONB management where relevant (e.g. climate change, landscape character, geology, historic features, habitats and biological diversity and opportunities for people to and explore the area.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
enhance adaptability to future climate change. • Raise awareness of the AONB.	
Wye Valley AONB (2010) Management Plan 2009 - 2014	
The Countryside and Rights of Way Act (2000) placed a statutory duty on AONB local authorities to produce and review Management Plans that will formulate their policy for the management of the area. The plan is structured around the two statutory purposes of conserving and enhancing the natural beauty of the AONB and improving the understanding and enjoyment of the special qualities of the Wye Valley. The Management Plan is based around the following four guiding principles: • Manage the changing demands placed upon the landscape to provide ecosystem services at the same time as preserving the valued features of the Wye Valley. • Manage the Wye Valley in a sustainable manner, balancing the environmental, social and economic issues of the local area. • Manage the Wye Valley in partnership with the local community to provide benefit for all. • Share with the global community the lessons learnt in managing the Wye Valley AONB.	The DP may have the potential to affect several of the principles for managing the Wye Valley AONB. The SEA will include objectives that take into account the principles of the Wye Valley AONB management where relevant (e.g. climate change, landscape character, geology, historic features, habitats and biological diversity and opportunities for people to and explore the area.
Shropshire Hills AONB (2009) Management Plan 2009 - 2014	
The Countryside and Rights of Way Act (2000) placed a statutory duty on AONB local authorities to produce and review Management Plans that will formulate their policy for the management of the area. The plan is structured around the two statutory purposes of conserving and enhancing the natural beauty of the AONB and improving the understanding and enjoyment of the special qualities of the Shropshire Hills. The Management Plan is cased around the following five strategic principles: • Valuing, conserving and enhancing the habitats, heritage and quality of the AONB. • Keep the Shropshire Hills thriving with appropriate land management and sustainable communities. • Shift to low carbon alternatives where ever possible to mitigate climate change. • Adapt for the future to work alongside nature utilising landscape scale conservation, ecosystem services and social and economic adaptation. • Help people to connect with the AONB through raised	The DP may have the potential to affect several of the principles for managing the Shropshire Hills AONB. The SEA will include objectives that take into account the principles of the Shropshire Hills AONB management where relevant (e.g. climate change, landscape character, geology, historic features, habitats and biological diversity and opportunities for people to and explore the area.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
awareness.	
Biodiversity Action Plans.	
Local Biodiversity Action Plans (LBAPs) identify priority habitats and species at a local level, setting targets for their conservation and outlining the mechanisms for achieving these targets. The following BAPs are relevant to the Severn Trent Water area: Warwickshire, Coventry and Solihull LBAP Worcestershire BAP Nottinghamshire LBAP Staffordshire BAP Shropshire BAP Peak District LBAP Lowland Derbyshire LBAP Powys LBAP Wales BAP The key principles that inform the approach to the management of the BAP are as follows; • Enhance and protect biodiversity by preventing habitat loss and degradation to secure healthy, functioning ecosystems. • Facilitate the adaptation of the natural environment so that it can be resilient to climate change. • To increase public awareness and involvement with biodiversity conservation.	The impact of DP options on biodiversity and climate change resilience should be considered.
Gloucestershire Biodiversity Framework 2010	
The Local Biodiversity Partnership developed a 50 year vision for delivering a new County framework for biodiversity conservation through a focus on Strategic Nature Areas (SNAs) which go to make up the Gloucestershire Nature Map. SNAs provide a targeted approach to conserving biodiversity at a landscape-scale and also help adapt to climate change. The SNAs identify where the greatest opportunities for habitat restoration and creation lie, enabling the efficient delivery of resources to where they will have the greatest positive conservation impact.	The impact of DP options on biodiversity and climate change resilience should be considered. The SEA should seek to advise the DP how best to proceed with the minimum possible environmental impact.
Environment Agency (2004) River Trent Salmon Action Plan (SAP)	
The Plan details the threats facing the salmon population of the River Trent and aims and objectives for improving the situation. Key objectives are as follows; • Restore a self-sustaining run of salmon to the River Trent by 2028.	The DP may have the potential to impact on fish migration. The SEA will cover fish passage as an element of at least one sustainability objective.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
• Monitoring populations in headwaters to capture increase in smolt production. • Habitat improvements along the river corridors.	
Birmingham City Council (2010) *Core Strategy 2026 Consultation Draft*	
The purpose of the Core Strategy is to set out a clear spatial framework for the growth of Birmingham up to 2026. The Strategy includes the following objectives: • To promote Birmingham's national and international role as a global city • To create a more sustainable city that minimises its carbon footprint and waste while allowing the city to grow • To develop Birmingham as a city of vibrant urban villages, that is safe, diverse and inclusive with a locally distinctive character • To secure a significant increase in the city's population, towards 1.1 million • To create a prosperous, successful economy, with benefits felt by all • To provide high quality transportation links throughout the city and with other places and encourage the increased use of public transport • To make Birmingham a learning city with quality institutions • To encourage better health and wellbeing through the provision of new and existing sports and leisure assets linked to good quality public open space throughout the city • To protect and enhance the city's heritage and historic environments allowing biodiversity and wildlife to flourish	The DP should ensure the sustainable management of water resources. SEA objectives should reflect and consider relevant objectives from the Core Strategy.
Harborough District (2011) *Core Strategy Adopted*	
The Core Strategy is the key plan within the Local Development Framework for Harborough District. It sets the context for all future local planning documents. The Strategy includes the following objectives: To meet strategic housing requirements, the accommodation needs of the District's population and the need for affordable housing To locate new development in sustainable locations that respect environmental capacity and which have appropriate infrastructure, services and facilities in place or where these can realistically be provided; and to encourage the appropriate re-use of brownfield sites in sustainable locations. To protect, enhance and, where appropriate, secure the provision of additional accessible community services, facilities, open	The DP should ensure the sustainable management of water resources. SEA objectives should reflect and consider relevant objectives from the Core Strategy.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
spaces and infrastructure throughout the District. To protect and enhance the District's distinctive rural landscape, settlement pattern, historic assets, natural environment and biodiversity. To safeguard and enhance the character and built heritage of the District's settlements and ensure that residential amenity is protected. To protect and promote the economic viability and vitality of the District's towns and rural centres. To reduce the environmental impacts of road traffic, both private and commercial, and lessen the need for car use by encouraging alternative modes of transport including cycling and walking. To minimise waste production and maximise re-use and recycling of waste. To minimise energy demand and maximise the use of renewable energy resources. To promote sustainable growth of tourism and access to the countryside within the district. To locate new development in areas which will not put life or property at risk of flooding	
Chesterfield Borough (2012) *Draft Core Strategy February 2012*	
The Chesterfield Borough Core Strategy sets out our proposals for the development and use of land in Chesterfield over the next 20 years. The Strategy outlines the vision of what the Borough will look like in the future. The Strategy includes the following objectives: Minimise greenhouse gas emissions in line with Government targets, increase the use of renewable energy and help the borough adapt to the effects of climate change. Provide sites for 7,600 homes to be built between 2011 and 2031 to meet the housing requirement for Chesterfield borough Adopt the approach to flood risk set out by the Government in allocating land for development, so that risk of flooding at existing and new properties is reduced. Provide 79 ha of new employment land between 2011 and 2031 Prevent any net loss of biodiversity and protect and improve the borough's key green infrastructure assets (such as Borough & Community Parks, Wildlife Sites, River/Canal Corridors and Greenways). Ensure that new development is designed to a high standard, promotes architectural quality and reflects local distinctiveness.	The DP should ensure the sustainable management of water resources. SEA objectives should reflect and consider relevant objectives from the Core Strategy.
Black Country (2012) *Core Strategy Adopted February 2011*	

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
The four Black Country Local Authorities (Dudley, Sandwell, Walsall and Wolverhampton) agreed to work together to produce a Black Country Core Strategy in partnership with the community and other key organisations such as voluntary and private sector bodies and businesses. The Vision of the strategy consists of three major directions of change and underpins the approach to the whole strategy; 1. Sustainable Communities 2; Environmental Transformation and 3. Economic Prosperity. Relevant Objectives of the Strategy are as follows: • Focussed investment and development in comparison shopping, office employment, leisure, tourism and culture within the four Strategic Centres: Brierley Hill, Walsall, West Bromwich and Wolverhampton, to retain and increase their share of economic activity and meet the increasing aspirations of their catchment areas. • Model sustainable communities on redundant employment land in the Regeneration Corridors, that make the most of opportunities such as public transport and canal networks, are well served by residential services and green infrastructure, have good walking, cycling and public transport links to retained employment areas and centres, are set in a high quality natural and built environment and are well integrated with surrounding areas. • Enhancements to the character of the Black Country's existing housing areas by protecting and improving high quality residential areas and pursuing a sustained and focussed programme of housing renewal in low quality residential areas requiring intervention. • A network of vibrant and attractive town, district and local centres across the Black Country, each offering an appropriate choice of facilities. The historic character of these centres will be protected and enhanced through sensitive development of local facilities, housing led development and environmental improvements to create safe, attractive streets and spaces. • A high quality environment fit for the future, and a strong Urban Park focussed on beacons, corridors and communities; respecting, protecting and enhancing the unique biodiversity and geodiversity of the Black Country and making the most of its assets whilst valuing its local character and industrial legacy. • A first-class transport network providing rapid, convenient and sustainable links between the Strategic Centres, existing and new communities, and employment sites. • A sustainable network of community services, particularly high quality lifelong learning, health care and sport and recreation facilities, which are easily	The DP should ensure the sustainable management of water resources. SEA objectives should reflect and consider relevant objectives from the Core Strategy.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
accessible to all residents at a neighbourhood level, resulting in an increase in levels of qualifications, skills, health and well-being, a decrease in deprivation indicators and improved perception of residential neighbourhoods across the Black Country. • Sufficient waste recycling and waste management facilities in locations which are the most accessible and have the least environmental impact. • Safeguard and make the most sustainable use of the Black Country's mineral resources including primary, secondary and recycled materials, without compromising environmental quality.	
Leicester City Council *(2010) Leicester City Local Development Framework - Core Strategy, adopted November 2010*	
The Core Strategy sets out the vision, objectives and spatial strategy for the City. The Core Strategy also addresses the spatial aspects of the Community Strategy, as well as other strategies and programmes of key stakeholders in the City. Objectives of the Core Strategy include: To reduce inequalities of health between city Communities To reduce the impact of development on climate Change A high standard of design for new development. To enable people to move in and around the City. To develop a strong and vibrant City Centre. To preserve and enhance Leicester's heritage. To conserve, protect and enhance the City's natural environment. To ensure access to high quality outdoor sports children's play provision and active recreation facilities for all residents.	The DP should ensure the sustainable management of water resources. SEA objectives should reflect and consider relevant objectives from the Core Strategy.
Borough of Redditch (2011) *Revised Preferred Draft Core Strategy – Development Plan Document – for the Borough of Redditch Jan – March 2011 (DRAFT)*	
To deliver the Vision a set of 12 non-prioritised Objectives have been developed that reflect the aspirations of the vision and provide direction for the Core Strategy policies. These include: To maintain and provide a high quality natural, rural and historic environment with a Green Infrastructure network which maximises opportunities for biodiversity value, wildlife and ecological connectivity To ensure that all new development in Redditch Borough will work towards the achievement of being carbon neutral in line with the National Standards To reduce the causes of, minimise the impacts of and adapt to climate change	The DP should ensure the sustainable management of water resources. SEA objectives should reflect and consider relevant objectives from the Core Strategy.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
To protect, promote and where possible enhance the quality of the Boroughs landscape and Redditch Borough's other distinctive features To encourage safer, sustainable travel patterns, improve accessibility and maintain a balanced road hierarchy and reduce the need to travel To enhance the visitor economy and Redditch's cultural and leisure opportunities including Abbey Stadium Reduce crime and anti-social behaviour and the fear of crime through high quality design, with regeneration achieved at the former New Town District Centres To protect and enhance water, air and soil and minimise flood risk Ensuring there is a range of health facilities that support existing and new communities and to promote the role of healthy living through good planning.	
Bromsgrove District Council (2011) *Draft Core Strategy 2 – January 2011 (DRAFT)*	
A set of spatial objectives have been defined that aim to deliver the spatial vision, for Bromsgrove by 202611. The objectives provide the basis for the preferred spatial strategy for the District, including the core policies which are necessary to secure the delivery of the vision. The proposed strategic objectives include: Encourage more sustainable and healthy modes of travel and a modal shift in transport, for example encouraging walking and cycling and promoting a more integrated, sustainable and reliable public transport network across the District Improve quality of life, sense of well-being and reduce fear of crime by promoting active, healthy lifestyles for example by providing safe and accessible health, education, cultural and leisure facilities to meet the needs of Bromsgrove's residents Protect and enhance the unique character, quality and appearance of the historic and natural environment, throughout the District Safeguard and enhance the District's natural resources such as soil, water and air quality; minimise waste and increase recycling including re-use of land, buildings and building materials Ensure the District is equipped to adapt to and mitigate against the impacts of climate change, for example, by managing and reducing flood risk by ensuring water and energy efficiency and by encouraging new developments to be low or zero carbon Promote high quality design of new developments and use of sustainable building materials and techniques Foster local community pride, cohesion and involvement in the plan making process	The DP should ensure the sustainable management of water resources. SEA objectives should reflect and consider relevant objectives from the Core Strategy.
Powys County Council (2010) *Powys Unitary Development Plan 2001-2016*	
Provides a policy framework for positive forward planning, proposals and allocations for future developments and the basis on which consistent development control decisions can be made.	The DP should ensure the sustainable management of water resources. SEA objectives should reflect and consider relevant objectives from the UDP.

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
Its strategic aims include: To support and improve community services and facilities; • To strengthen communities and promote social inclusion for all; • To support and develop public transport, rights of way and cycle facilities; • To conserve and enhance the environment, historical and archaeological assets and the countryside as a whole; • To plan positively for waste management and promote waste reduction; • To promote energy conservation and efficiency; • To encourage appropriate energy generation from renewable sources; • To strengthen design standards and promote good design across the County; and • To plan for the sustainable extraction and recycling of mineral which meet society's needs and to safeguard valuable mineral resources for future generations.	
Powys County Council (2012) *Powys Local Development Plan 2011 - 2026 Preferred Strategy (Consultation Draft)*	
Identifies a vision and objectives for the LDP based on the characteristics, issues and needs of the County and the communities it supports. The objectives include: • To direct development towards locations served by a choice of sustainable transport modes. • To support the re-use of suitably located previously developed land where possible. • To support the transition to a low carbon and low waste county, minimising its contribution to climate change and resource demands. • To encourage communities to generate energy from renewable resources. • To support the regeneration and renewal of Powys' built environment. • To facilitate the sustainable management of the county's natural and environmental resources. • To conserve, protect and enhance the built heritage, landscape and cultural assets of Powys. • To conserve and protect land important for environmental quality and biodiversity. • To encourage active, healthy lifestyles by enabling access to open spaces, areas for recreation and amenity. • To promote development which supports community wellbeing and cohesion.	The DP should ensure the sustainable management of water resources. SEA objectives should reflect and consider relevant objectives from the LDP.
Local Planning Authorities (various) Water Cycle Studies that have been undertaken for housing growth points	

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
A water cycle study identifies tensions between growth proposals and environmental requirements on a local scale, and identifies potential solutions to addressing them. The water cycle studies within Severn Trent Water area: • bring together all partners and stakeholders existing knowledge, understanding and skills • bring together all water and planning evidence under a single framework • understand the environmental and physical constraints to development • work alongside green infrastructure planning to identify opportunities for more sustainable planning • identifying water cycle planning policies and a water cycle strategy to help all partners plan for a sustainable future water environment.	The DP has the potential to impact on water resources, water supply and waste water treatment, so should take account of development proposed within the area.
Derwent Valley Mills World Heritage Site (2007) Management Plan	
The plan aims to set the framework for co-ordinated management and the development of partnerships. The plan is intended to enhance the existing plan coverage (i.e. other local plans) and will serve to inform existing and future management documents relating to the area. The aims of the plan include: • Identify key issues affecting the vulnerability of the cultural landscape, opportunities for its enhancement and measures to protect the crucial significance of the site; • Establish guidelines for the future management of the site, and the buildings and land within it; • Increase public awareness of, and interest in the site; • Identify how present and possible future tourism within the site can be developed in an environmentally and economically sustainable way.	The DP may have the potential to affect the management of the WHS. The SEA will include objectives that address potential effects on the management objectives of the site where relevant.
Ironbridge World Heritage Site (2001) Management Plan	
The management plan has been prepared in order to conserve the outstanding universal value of the cultural heritage assets of the Ironbridge Gorge WHS. The plan identifies the main issues facing the WHS and sets out a range of objectives and actions to address those issues.	The DP may have the potential to affect the management of the WHS. The SEA will include objectives that address potential effects on the management objectives of the site where relevant.
Birmingham City Council (2007) *Heritage Strategy 2007-2012*	
The strategy includes the objectives: To provide a strategic framework for the City Council's heritage	

Objectives identified in the Plan or Programme	Influences on the DP and implications for the SEA objectives
activity. To identify the pressures facing the City Council's existing heritage assets and make recommendations as to how these might be addressed. To promote access to the City Council's heritage assets and extend the diversity of its heritage activity.	
Powys County Council (2010) *Built Heritage Strategy: Ensuring Powys' Past is Our Future*	
The objectives of the strategy include: To identify, understand and maintain local distinctiveness and use this information as an overarching concept to inform policies, current practices and future work. To promote and increase access, knowledge, understanding and enjoyment of the built heritage. To protect and where possible enhance the built heritage of Powys to ensure it is safe-guarded for enjoyment by future generations.	
West Midlands Woodland and Forestry Forum (2007) *Green Infrastructure: A Prospectus for the West Midlands Region*	
The prospectus has five aims: To ensure politicians, policy-developers and decision makers throughout the West Midlands are aware of the vital roles of GI. To advocate greater investment in, and improved management of, the Region's existing GI. To ensure GI is appreciated as an essential element of delivering sustainable communities, underpinning growth and regeneration. To promote a robust and systematic approach to GI assessment, planning and investment by local, sub-regional and regional planning authorities. To ensure GI is proactively planned from the earliest stages of strategic plan preparation through to concept and design stages of all future developments in the Region.	

APPENDIX C

REVIEW OF ENVIRONMENTAL BASELINE

LIMITATIONS OF THE DATA AND ASSUMPTIONS MADE

The Severn Trent Water supply area is large (21,000km²), which makes establishing a baseline quite difficult at the sub-regional level. There are also challenges around extrapolating information from data collated at differing spatial resolutions. Spatial data have been obtained for most of the SEA topics, and the baseline is presented graphically as mapped information where appropriate. In some instances, reporting cycles means that available information is dated, for example with respect to waste arisings, for which only 2006 and 2009 data are available (depending on waste type).

Data have generally been sourced from national or regional bodies where information is collected for the Severn Trent region using consistent methods. This allows for a more effective comparison between the regional and national averages; however, reliance on these data sets has in some cases meant that information is a number of years old.

There are some examples of information that is less recent (e.g. Defra's regional sustainability indicators). Consideration of the dramatic change in economic conditions since 2008 has been presented where relevant regarding information that dates pre-2008.

BIODIVERSITY, FAUNA AND FLORA

Baseline

Biodiversity is the variety of plants (flora) and animals (fauna) in an area, and their associated habitats. The importance of preserving biodiversity is recognised from an international to a local level. Biodiversity has importance in its own right, and has value in terms of quality of life and amenity. The Severn Trent region includes a number of sites that are designated at a European, national or local level as important for biodiversity (see **Figure C.1**).

In total there are 24 Special Areas of Conservation (SACs)[35], three Special Protection Areas (SPAs) [36] and five Ramsar sites in the Severn Trent region. There are also several designated sites (including the Severn and Humber Estuaries European Marine Sites) that are hydrologically connected to the Severn Trent Water supply

35 Special Areas of Conservation (SACs) are strictly protected sites designated under the EC Habitats Directive. Article 3 of the Habitats Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189habitat types and 788 species identified in Annexes I and II of the Directive (as amended) www.jncc.org.uk

36 Special Protection Areas (SPAs) are strictly protected sites classified in accordance with Article 4 of the EC Directive on the conservation of wild birds (79/409/EEC), also known as the Birds Directive, which came into force in April 1979. They are classified for rare and vulnerable birds, listed in Annex I to the Birds Directive, and for regularly occurring migratory species. www.jncc.org.uk

area. There are more than 600 Sites of Special Scientific Interest (SSSI) within the Severn Trent Water supply area, and additional SSSIs outside of the supply area but in hydrological continuity and therefore potentially affected by water resources supply schemes within the area. **Table C.1** presents details of water dependent/related internationally designated sites within the supply area and those that are considered to be relevant with respect to the potential source areas. The relevant CAMS area and WRZ each site is found within is also indicated. There are too many SSSI sites to include within the **Table C.1**, however, those SSSIs potentially impacted by any of the DP options have been identified and included in the SEA assessment.

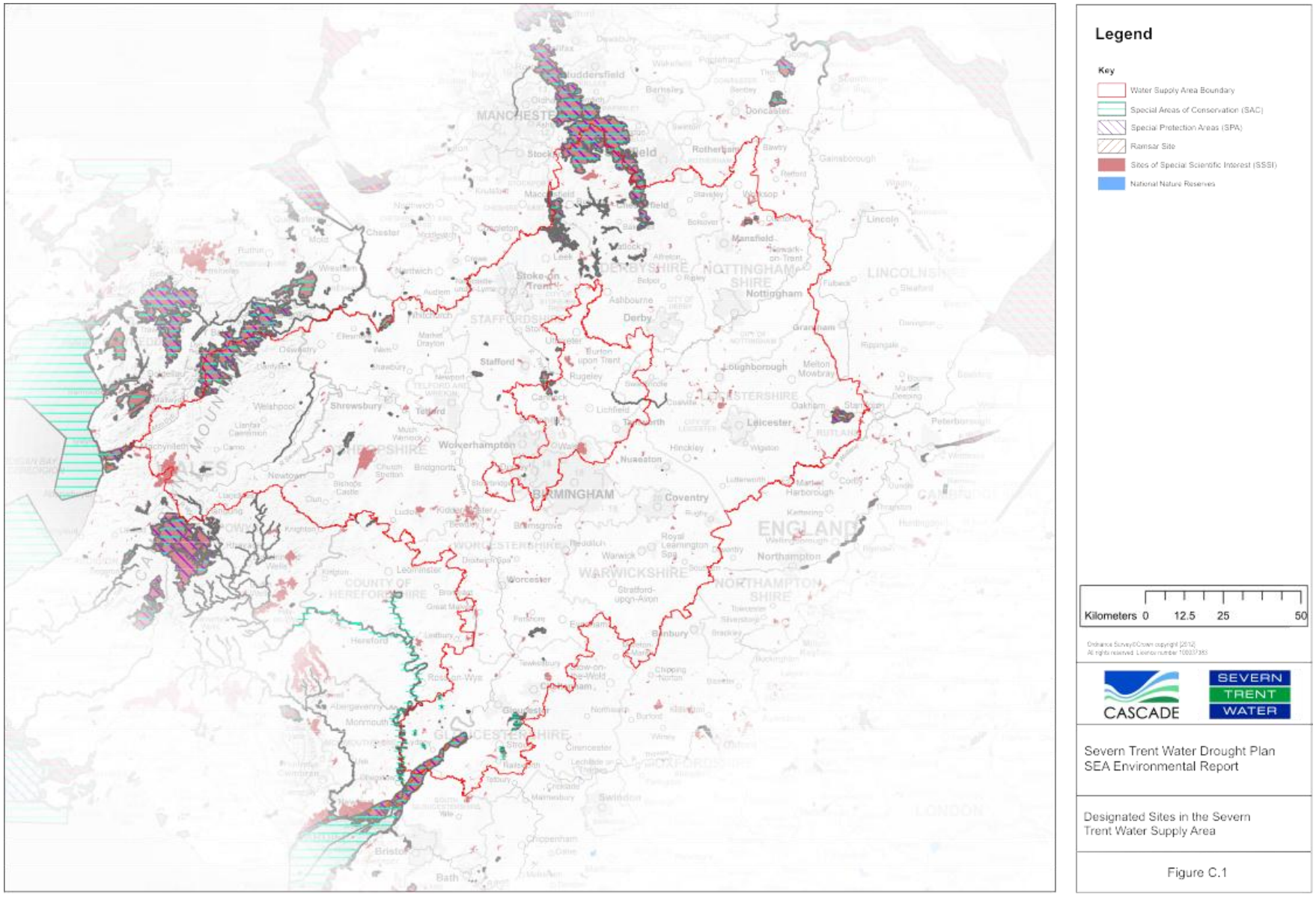

Legend
Key
Water Supply Area Boundary
Special Areas of Conservation (SAC)
Special Protection Areas (SPA)
Ramsar Site
Sites of Special Scientific Interest (SSSI)
National Nature Reserves
Kilometers 0 12.5 25 50
CASCADE
SEVERN TRENT WATER
Severn Trent Water Drought Plan
SEA Environmental Report
Designated Sites in the Severn Trent Water Supply Area
Figure C.1

Table C.1 Distribution of Water Dependent/Related European Designated Sites and Ramsar sites in the Severn Trent region

Site and Designation	CAMS	Water Resource Zone
Bees Nest & Green Clay Pits SAC, SSSI Peak District Dales SAC South Pennines Moors Phase 2 SPA Peak District Moors (South Pennines Moors Phase1) SPA, SAC	Derbyshire Derwent CAMS	Strategic Grid
River Mease SAC Ensor's Pool SAC	Tame, Anker and Mease CAMS	Strategic Grid, Wolverhampton
Fens Pool SAC Lypard Grange Ponds SAC	Worcestershire Middle Severn CAMS	Strategic Grid, Wolverhampton
Cotswold Beechwoods SAC	Severn Vale CAMS	Strategic Grid, Forest and Stroud
The Stipperstones and the Hollies SAC Clarepool Moss SAC Fenn's, Whixall and Bettisfield SAC Wem and Cadney Mosses SAC Brown Moss SAC Midland Meres and Mosses Phase 2 Ramsar Site	Shropshire Middle Severn CAMS	North Staffs
Montgomery Canal SAC Granllyn SAC Midland Meres and Mosses Phase 2 Ramsar Site Fenn's, Whixall, Bettisfield, Wem SAC Cadney Mosses SAC	Severn Uplands CAMS	Llandinam and Llanwrin, Shelton, Strategic Grid, North Staffs, Ruyton, Wolverhampton
Bredon Hill SAC Dixton Wood SAC	Warwickshire Avon CAMS	Strategic Grid
Severn Estuary European Marine Site (Ramsar Site, SPA, SAC) Walmore Common Ramsar Site, SPA	Severn Corridor CAMS	Llandinam and Llanwrin, Shelton, Forest and Stroud
Midland Meres and Mosses Phase 1 Ramsar / West MidlandsMosses SAC Chartley Moss SAC and Ramsar Cannock Chase SAC Pasturefields Saltmarsh SAC Mottley Meadows SAC Cannock Extension Canal SAC Cop Mere Ramsar	Staffordshire Trent Valley CAMS	North Staffs, Stafford, Shelton
Peak District Dales SAC South Pennines Moors Phase 2 SPA	Dove CAMS	North Staffs, Strategic Grid
Parts of the River Clun, which is a tributary of the Teme, are classed as a SAC due to the biodiversity of habitats and species in the river	Teme CAMS	Bishop Castle, Strategic Grid

Site and Designation	CAMS	Water Resource Zone
Humber Estuary European Marine Site (SAC, SPA, Ramsar) River Wye SAC River Wye and River Lugg SSSIs Elan Valley Woodlands SAC Migneint – Arenig – Dduallt SPA The Dee Estuary Ramsar Site, SPA, SAC Lleyn Peninsula and the Sarnau SAC Drostre Bank SAC Elenydd SAC Llangorse Lake SAC River Usk SAC Mynydd Epynt SAC Rhôs Gôch SAC Elenydd - Mallaen SPA Thorne and Hatfield Moors SPA Rutland Water Ramsar Site, SPA Cors Fochno and Dyfi Ramsar Site, SPA, SAC Brown Moss SAC	Various (including the Wye CAMS, Usk CAMS and Trent Corridor CAMS)	Not in the Severn Trent supply area but hydrologically linked, provide water supply to Severn Trent or are important sites for potential consideration in the DP SEA due to their close proximity to the Severn Trent region

A large proportion of the designated sites within the Severn Trent region are water dependent, or are related to surface water and groundwater sources. Therefore changes in the water regime (surface or groundwater) through abstraction, discharges and pollution could potentially affect the integrity and condition of these designated sites. The main potential effects that the Severn Trent Water DP needs to take into account with regard to designated sites include:

- Groundwater level impacts on terrestrial habitats as a result of any changes to abstraction or prescribed flows from surface water or groundwater.
- Flow/level impacts on aquatic habitats arising from any changes to abstraction and prescribed flows.
- Effects on species or habitats associated with the increased occurrence of eutrophication where freshwater inputs are reduced due to any changes to abstraction or prescribed flows such that they are insufficient to adequately dilute sewage discharges or agricultural runoff. This is also an issue in estuaries where high tides lead to the re-suspension of organic matter and solids.
- Increased turbidity and concentration of other pollutants due to reductions in freshwater dilution arising from any changes to abstraction or prescribed flows.
- Changes in channel morphology leading to the loss, fragmentation or disturbance of habitats arising from any changes to abstraction or prescribed flows

European Protected Species (EPS) are those which are afforded protection under the

Habitats Regulations. Under these Regulations it is a criminal offence to deliberately kill, capture, or disturb an EPS, or to damage or destroy the breeding site or resting place of such an animal. Thus, EPS are protected wherever they occur and not just within designated sites. European Protected Species are different to those species for which SACs are designated. The specific list of EPS within the regulations is more limited than the list of species for which SACs can be designated. The following is a list of species, found in Annex II of the Habitats Directive, that have been found within the Severn Trent region:

- Freshwater pearl mussel
- White clawed crayfish
- Brook lamprey
- River lamprey
- Allis shad
- Twaite shad
- Bullhead
- Atlantic salmon
- Great crested newt
- Otter
- Floating water plantain.

In addition to the Habitats Regulations, some species are also afforded protection at a national level under the Wildlife and Countryside Act 1981 (as amended). As well as covering some species that are listed in Annex II of the Habitats Directive, this Act also includes other species that are of national conservation importance. For example, water voles are one of the species listed in Schedule 5 of the Wildlife and Countryside Act 1981 that are found in the Severn Trent region. Although the DP is water focused, terrestrial as well as aquatic species need to be considered as they may be affected, for example through the construction of pipelines.

There are a number of species and habitats that have been identified as being of conservation importance under Priority Habitats and Species as identified on the English and Welsh Lists (S.41 NERC Act). Some of these species and habitats are present in the Severn Trent region. A large number of these species are listed above in regard to European and UK protected species.

The BAP habitats present within the Severn Trent region include the following:

- Eutrophic standing waters
- Mesotrophic lakes
- Blanket bog
- Fens (e.g. alkaline fens if the Wye Valley)
- Lowland meadows
- Lowland fens
- Wet woodland
- Blanket, basin and valley mires
- Reedbeds
- Upland hay meadows
- Coastal and floodplain grazing marsh
- Lowland raised bog.

Future Baseline

As part of the post 2010 policy framework for SSSIs, Natural England has developed a new trajectory to achieve the move of SSSIs from "recovering" into "favourable" condition with monitoring of sites to measure success.

The Natural Environment White Paper[37] identifies the Government's aims to work to achieve more, bigger, better and less-fragmented areas for wildlife, including no net loss of priority habitat and an increase of at least 200,000 hectares in the overall extent of priority habitats by 2020. By the same date the White Paper states the aim that at least 50% of SSSI will be in favourable condition, while maintaining at least 95% in favourable or recovering condition. The Natural Environment White Paper also aims for at least 17% of England to be managed effectively in order to safeguard biodiversity and ecosystem services, and at least 15% of degraded ecosystems that are important for climate change mitigation ad adaptation will be restored.

'Biodiversity 2020', the Strategy for England's wildlife and ecosystem services[38] builds on the Natural Environment White Paper. The mission for the strategy is *'to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people'*.

37 Defra (2011) The Natural Choice: securing the value of nature, The Natural Environment White Paper
38 Defra (2011) Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services

Both the Natural Environment White Paper and 'Biodiversity 2020' place significant emphasis on the importance of enhancing people's personal connection with wildlife and nature and better understanding of the value of nature's services.

The Environment Strategy for Wales[39] (in particular Outcomes 19, 20 and 21 for biodiversity), and Sustaining a Living Wales: A Green Paper on a new approach to natural resource management in Wales[40] promote sustainable use of the environment to make sure that the way the environment is used can sustain its healthy functioning as well as meeting societies immediate needs.

Key Issues

The key sustainability issues arising from the baseline assessment for biodiversity are:

- The need to protect or enhance the region's biodiversity, particularly protected sites designated for nature conservation.
- The need to avoid activities likely to cause irreversible damage to natural heritage.
- The need to take opportunities to improve connectivity between fragmented habitats.
- The need to engage more people in biodiversity issues so that they personally value biodiversity and know what they can do to help.

POPULATION AND HUMAN HEALTH

Baseline

Population

The East Midlands region had one of the fastest growing populations between 2001 and 2011, rising by 8.0%. For the same period, the population in the West Midlands region grew by 6.1% to a total population of 5.6 million. The West Midlands Region contains one of the largest conurbations in England, as well as some of the country's most rural and sparsely populated counties. Birmingham, the second largest local authority in the UK by population, had an estimated population of over 1 million people according to the Office of National Statistics (ONS) mid-2011 estimates. In the South West, the population grew by 7.5% between 2001 and 2011 to 5.3 million,

39 Welsh Assembly Government (2006), The Environment Strategy for Wales
40 Welsh Government (2012) Sustaining a Living Wales: A Green Paper on a new approach to natural resource management in Wales

while in Wales the population grew by 5.2% to just over 3 million. **Table C.2** shows the population and household statistics and projections for the regions that fall within the Severn Trent Water supply area and also provides comparison to the statistics for England as a whole.

Table C.2 Population and Household statistics and projections (millions)[41, 42,43,44]

Period	2011	2030	2008	2033	% change	
Region	**Population**	**Population**	**Household**	**Household**	**Population**	**Household**
West Midlands	5.6	6.0	2.2	3.2	7.0%	34%
East Midlands	4.5	5.2	1.9	2.4	16.4%	29%
South West	5.3	6.2	2.2	2.9	17.1%	30%
Wales	3.0	3.3	1.3	1.6	10%	19%
England	**52.2**	**59.7**	**21.7**	**27.5**	**14.4%**	**27%**

Human Health and Deprivation

The DP has the potential to influence quality of life, including human health, well-being, amenity and community, through actions to maintain essential water supplies during drought conditions. There could be beneficial (e.g. actions that safeguard essential water supplies to protect public health) or adverse impacts (e.g. noise or disruption associated with temporary infrastructure, such as temporary pumps, to transfer water to areas of need).

It has been shown that in some cases, people in disadvantaged areas experience greater exposure to negative impacts on human health including air pollution, sea flooding, and proximity to large industrial and waste management sites[45]. The Index of Multiple Deprivation combines a number of indicators, chosen to cover a range of economic, social and housing issues, into a single deprivation score for each Lower Super Output Area[46] in the UK. This allows each area to be ranked relative to one another according to their level of deprivation. The Indices are used widely to analyse patterns of deprivation, identify areas that would benefit from special initiatives or

41 ONS (2012) Population Estimates for England and Wales, Mid-2011 (2011 Census-based)
42 ONS (2011) Region and Country Profiles, Population and Migration, October 2011 Release
43 ONS (2010) Housing Statistical Release - Household Projections 2008 to 2033, England
44 WAG (2010) - 2008-based Household Projections in Wales <http://www.statswales.wales.gov.uk/TableViewer/tableView.aspx?ReportId=25028>
45 Defra (2006) Air Quality and Social Deprivation in the UK: an environmental inequalities analysis
46 Super Output Areas (SOAs) are a set of geographical areas developed following the 2001 census. The aim was to produce a set of areas of consistent size, whose boundaries would not change, suitable for the publication of data such as the Indices of Deprivation. They are an aggregation of adjacent Output Areas with similar social characteristics. Lower Layer Super Output Areas (LSOAs) typically contain 4 to 6 OAs with a population of around 1,500.

programmes and as a tool to determine eligibility for specific funding streams. The English Index of Multiple Deprivation (2010)[47] and the Welsh Index of Multiple Deprivation (2011)[48] have been developed slightly differently and cannot be compared directly. **Figure C.2** shows the Index of Multiple Deprivation across the WRZs.

As is the case with the rest of the UK, most large urban centres in the Severn Trent Water supply area contain areas with high levels of deprivation. These are predominantly in the centre and north east of the supply area associated with the urban areas of Birmingham, Nottingham, Mansfield, Stoke-on-Trent and Leicester. However, there are also pockets of deprivation associated with smaller centres which should not be overlooked, for example in Worcester and Kidderminster.

Data relating to drinking water quality, pollution incidents and air quality, which could also be affected by the DP, and as a result affect amenity and human health are covered in separate sections of this report. It is notable that the Consumer Council for Water 2010/11 report on Complaint Handling in the Water Industry in England and Wales[49] show that overall industry complaints reduced by 4.5% year-on-year (reducing from 193,824 to 185,140), representing the third year of a downward trend[50]. Severn Trent Water reported 24,185 complaints for 2010/11, an increase from the previous year (20,895).

The DP could also impact on communities in terms of severance, blight and loss of sense of place. It is not possible to collect baseline data against which to assess such impacts. These impacts would need to be assessed on a site-specific basis and are likely to be mitigated through good design.

Recreation and Tourism

The DP has the potential to affect areas with recreational value through temporary changes to abstraction or prescribed flow requirements from existing Severn Trent water sources.

There are a variety of opportunities for recreation and tourism within the Severn Trent Water supply area. Many of the recreational and cultural offerings are represented in other topic areas in the baseline. For example, the WRZs include a number of water resources of recreation importance (see Section 4.5) including canals (e.g. the Shropshire Union Canal and Gloucester and Sharpness Canal),

47 http://www.communities.gov.uk/communities/research/indicesdeprivation/deprivation10/
48 http://wales.gov.uk/topics/statistics/publications/wimd11guidance/?lang=en
49 Consumer Council for Water (2011) Complaint Handling in the Water Industry England and Wales April 2010 – March 2011
50 Consumer Council for Water (2011) Water Complaints Down - But Not Out!

reservoirs for sailing or fishing and river sections of particular importance with respect to navigation (e.g. the River Severn between Stourport and Sharpness) and angling. The River Severn itself caters for the full range of freshwater angling, traditional river fly fishing for trout in the upper reaches , specimen chub and barbel in the middle reaches, roach and bream in the lower reaches and salmon fishing throughout. Other rivers providing angling opportunities include the Dove, the Avon and the Trent[51].

Other, non-water based, recreational and cultural resources in the Severn Trent Water supply area include a number of nature reserves presented in Section 4.2. Section 4.8 identifies the importance of the Severn Trent Water supply area with respect to heritage assets, including two internationally recognised World Heritage Sites and 242 Registered Parks and Gardens. Section 4.9 presents the landscape baseline, which includes a number of Areas of Outstanding Natural Beauty (AONB) and the Peak District National Park. Public open space, Rights of Way, walking routes or cycle routes are also important with respect to recreation and tourism. The National Planning Policy Framework[52] (NPPF) states that planning policies should protect and enhance public rights of way and access.

Tourism is the fifth largest industry in the UK and supports 2.2 million jobs in England (forming England's third largest employment sector), contributing nearly £97 billion to the economy[53]. There were 7.7 million domestic overnight trips in the East Midlands (8% of all the trips in England) generating £1,029 million[54]. The top three most visited local authorities in the East Midlands (average 2008-10) were Nottingham, the Derbyshire Dales and Derby. In the West Midlands there were 7.9 million domestic overnight trips in 2010 (8% of all the trips in England) generating £1,078 million[55]. The top three most visited local authorities in the West Midlands (average 2008-10) were Birmingham, Coventry and Stratford-on-Avon. In 2009, 9 million UK domestic tourist trips were made to Wales, generating £1.4 billion in addition to a total of £332 million generated by 991,000 overseas visits[56].

Future Baseline

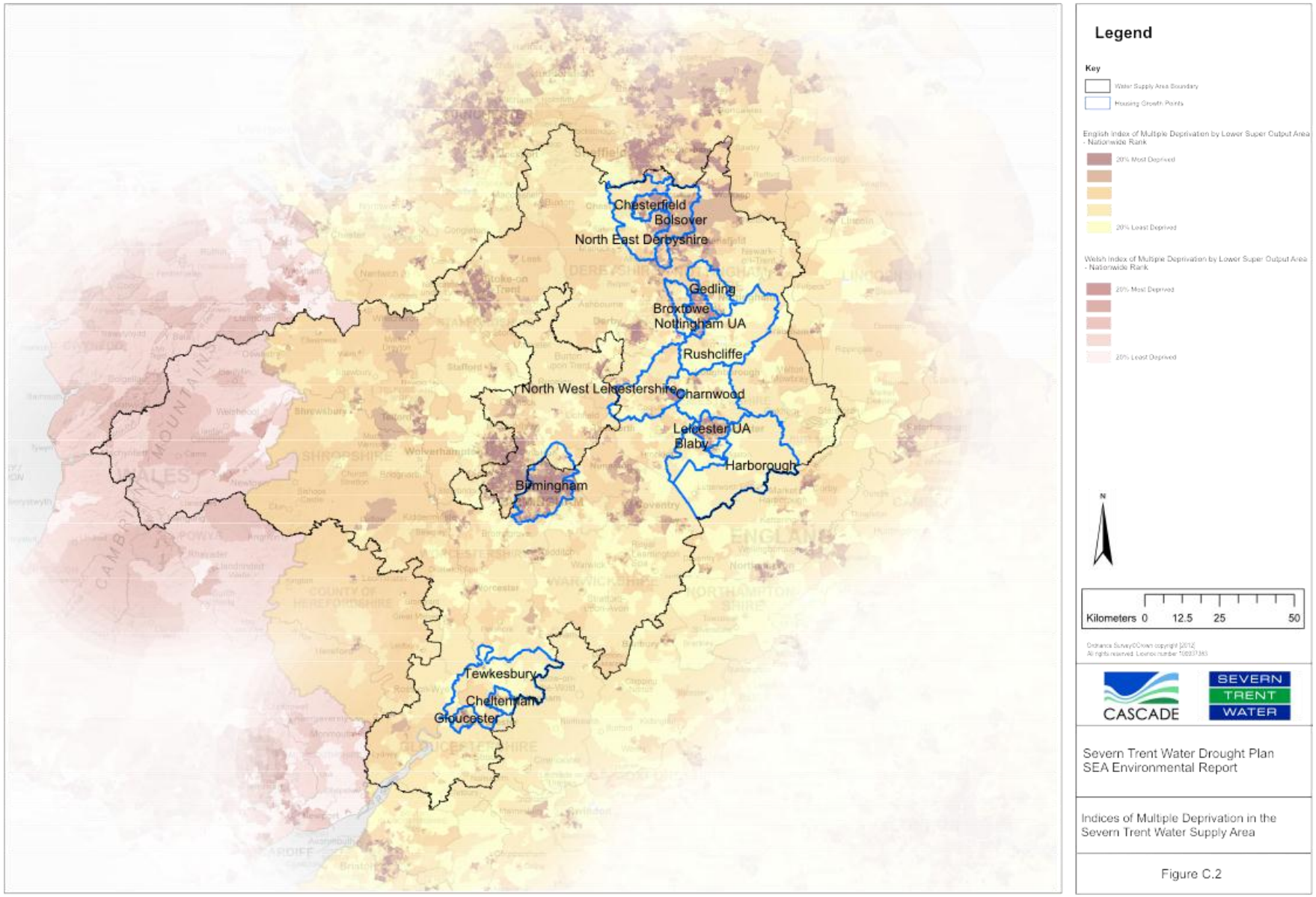
The population in the Severn Trent region is expected to grow at a rate between 9% and 17% (see **Table C.2**), with an increasing proportion of people at or above state pension age. Household projections show potential increases of between 19% and

51 Environment Agency (2009) Midlands fisheries guides
52 Communities and Local Government (2012) National Planning Policy Framework
53 Deloitte (2010) The Economic Contribution of the Visitor Economy: UK and the Nations. London
54 Visit England (2010) East Midlands Regional Summary (2006-2010)
55 Visit England (2010) West Midlands Regional Summary (2006-2010)
56 WAG (2010) Tourist traffic to Wales: Total expenditure, http://www.statswales.wales.gov.uk/ReportFolders/reportFolders.aspx accessed November 2010

34% across the Severn Trent region, with an increasing proportion of one person households[57] and average household size decreasing[58].

Severn Trent Water has identified several administrative areas that have highlighted future housing growth (see 'Housing Growth Points' in **Figure C.2**). Birmingham County Council's Core Strategy identifies the provision of 50,600 new homes between 2006 and 2026. Harborough District Council's Core Strategy identifies the provision of 7,700 new houses between 2006 and 2028. Similarly Chesterfield Borough Council's Core Strategy includes for the provision of sites for 7,600 homes to 2011 and 2031.

57 ONS (2010) Housing Statistical Release - Household Projections 2008 to 2033, England
58 WAG (2011) Ystadegau ar gyfer Cymru - Statistics for Wales: Household Projections for Wales


Chesterfield
Bolsover
North East Derbyshire
Gedling
Broxtowe
Nottingham UA
Rushcliffe
North West Leicestershire
Charnwood
Leicester UA
Blaby
Harborough
Birmingham
Tewkesbury
Cheltenham
Gloucester
Legend
Key
Water Supply Area Boundary
Housing Growth Points
English Index of Multiple Deprivation by Lower Super Output Area - Nationwide Rank
20% Most Deprived
20% Least Deprived
Welsh Index of Multiple Deprivation by Lower Super Output Area - Nationwide Rank
20% Most Deprived
20% Least Deprived
N
Kilometers 0 12.5 25 50
CASCADE
SEVERN TRENT WATER
Severn Trent Water Drought Plan
SEA Environmental Report
Indices of Multiple Deprivation in the Severn Trent Water Supply Area
Figure C.2

In response to recent studies, access to recreational resources, green spaces and the historic environment will have greater importance in future planning[59]. For example the National Ecosystem Assessment and the Marmot Review, *Fair Society, Healthy Lives*, demonstrate the positive impact that nature has on mental and physical health and as a result the Government intends to establish a Green Infrastructure[60] Partnership with civil society to support the development of green infrastructure in England.

Improvements to the quality of the water environment and potential climate change impacts (higher summer temperatures) will present opportunities for an expanding tourist industry in the region[61].

Key Issues

The key sustainability issues arising from the baseline assessment for population and human health are:

- The need to ensure continued improvements in levels of health across the region, particularly in urban areas and deprived areas
- The need to ensure essential water supplies are safeguarded to all communities to protect public health and economic activity
- The need to ensure a balance between different aspects of the built and natural environment that will help to provide opportunities for local residents and tourists, including opportunities for access to recreational resources and the natural and historic environment
- The need to promote the health benefits of drinking water, encourage efficient use of water and ensure people understand the value of water.

MATERIAL ASSESTS AND RESOURCE USE

Baseline

Water Use

In 2011/12, Severn Trent Water put a total of 1,844million litres per day (Ml/d) into supply. Severn Trent Water currently transfers on average 69Ml/d to other water companies (mainly Yorkshire Water) and imports approximately 377Ml/d from other

59 Defra (2011) The Natural Choice: securing the value of nature, The Natural Environment White Paper
60 Green infrastructure is a term used to refer to the living network of green spaces, water and other environmental features in both urban and rural areas
61 Defra (2012) The UK Climate Change Risk Assessment 2012 Evidence Report

water companies (South Staffordshire Water, Anglian Water and Dwr Cymru Welsh Water via the Elan Reservoir system). The quantity of potable water delivered to customers for public supply in 2011/12 was 1,390Ml/d which was slightly less than for the previous reporting year, and continues the general trend downwards. Leakage reported by Severn Trent Water for 2011/12 was 464Ml/d, representing a 33Ml/d reduction from the year before[62]. The target of 483Ml/d was outperformed by 10Ml/d. Use of water per person is relatively low in the Severn Trent Water supply area compared to other parts of the country, with an average use per person of 127 litres/day compared to a national average in England and Wales of 151 litres/day.

Severn Trent Water has on-going programmes to reduce leakage from its network and to encourage more efficient use of water by customers.

Resource Use and Waste

The need for society to reduce the amount of waste it generates by more efficient use of materials, and improving the management of waste that is produced, is better appreciated now than it was a decade ago. Waste going to landfill has nearly halved since 2000; household recycling rates have climbed to 40%; waste generated by businesses declined by 29% in the six years to 2009 and business recycling rates are above 50%[63]. In line with the widely adopted 'waste hierarchy', best practice for waste management is to prevent, re-use, recycle and recover, and only then should disposal (or storage) in landfill be considered.

Data on waste arisings is collected in a range of categories. The activities of the water industry contribute to construction and demolition waste (which includes waste produced through excavation activities), through construction of new infrastructure. The water industry also contributes to several waste streams through the operation of facilities. These include commercial and industrial waste (as the statistics for these streams include waste arisings from the power and utilities sector, which includes water supply and sewage removal), and also hazardous wastes in the form of effluent from wastewater treatment. **Table C.3** shows the latest available data for waste arising by region.

DP options that require provision of infrastructure may result in the use of raw materials and the production of waste. The operation of DP options may result in additional chemical use for water treatment and production of waste, and increased energy use for pumping water or for additional vehicle movements (including those associated with some demand management options). The water industry as a whole has relatively high rates of recycling: the 2010/2011 recycling rate for non-sludge

62 Severn Trent Water (2012) Ofwat Annual Return 2012
63 Defra (2011) Government Review of Waste Policy in England 2011

waste (includes office and administrative waste, grit and screenings from wastewater treatment, sludge produced from raw water treatment, construction waste from construction projects, and excavated material from network projects) was 80% nationally[64].

Table C.3 Waste Arising's by Region

Waste	East Midlands	West Midlands	Wales[65]	South West
Commercial and Industrial waste arisings produced in region (million tonnes) (2009)[66]	6.3	5.2	3.6	4.0
Construction & Demolition Waste (2006)[67]	9.8	9.8	12.2	9.4
Total waste produced by region (2006)[68]	24.3	23.0	Unavailable	44.5

Future Baseline

The Government's national aspiration is to reduce water usage to an average of 130 litres per person per day by 2030. There is the potential for increase in operational waste from the water sector as regional population increases and standards of treatment are increased through regulatory requirements.

Due to the Waste Strategy for England, diminishing landfill capacity and a fast-growing waste recycling and recovery industry, the proportion of waste sent to recovery rather than landfill is set to continue to increase in the future. One of the Waste Framework Directive targets is for at least 70% of construction and demolition waste to go to recovery by 2020.

The Welsh Assembly Government describes a framework for resource efficiency and waste management between now and 2050 in *Towards Zero Waste*[69], setting a target for Wales to recycle 70 % of its waste by 2025 and an aim to become 'zero waste' by 2050..

64 Water UK (2010) Sustainability Indicators 2010-2011 Report
65 WAG (2010) State of the Environment <http://www.statswales.wales.gov.uk/TableViewer/document.aspx?ReportId=5815> accessed 1 May 2011
66 Defra (2011) Waste Data Overview in England 2011
67 Sustainable consumption and production: <http://archive.defra.gov.uk/sustainable/government/progress/regional/data-sheets/> accessed 18 April 2012
68 Sustainable consumption and production: <http://archive.defra.gov.uk/sustainable/government/progress/regional/data-sheets/> accessed 18 April 2012
69 Welsh Assembly Government (2010) Towards Zero Waste

The Government's National Infrastructure Plan[70] (2011) includes visions to manage natural capital sustainably; treat water and waste in ways that sustain the environment and enable the economy to prosper; ensure a supply of water that meets the needs of households, businesses and the environment now and in the future and deals with waste in accordance with the waste hierarchy.

Severn Trent Water has on-going programmes to reduce leakage from its water network and to encourage more efficient use of water by customers.

Key Issues

The key sustainability issues arising from the baseline assessment for Material Assets and Resource Use are:

- The need to minimise the consumption of resources, including water and energy.
- The need to reduce the total amount of waste produced in the region, from all sources, and to reduce the proportion of this waste sent to landfill.

WATER

Baseline

In the context of the WFD, the water environment includes rivers, lakes, estuaries, groundwater and coastal waters out to one nautical mile. The Severn Trent Water supply area falls within four River Basin Districts (RBD). The majority of the supply area lies within the Severn RBD and the Humber RBD. Two small areas on the western and eastern boundary lie within the Western Wales RBD and the Anglian RBD, respectively. **Figure 2.1** shows the four RBDs in relation to the Severn Trent Water supply area.

Surface Waters: Rivers and Canals

The part of the Severn Trent Water supply area that falls within the Severn RBD includes the River Severn and its major tributaries of the Teme and Warwickshire Avon, as well as the River Wye from which Severn Trent Water also abstracts water for supply. The part of the Severn Trent Water supply area that falls within the Humber RBD includes the River Trent, Derbyshire Derwent, River Soar, River Tame, River Anker and River Mease. **Figure C.3** shows the distribution of surface waters in the Severn Trent Water supply area. River-derived water sources provide 35% of the total volume of water Severn Trent Water put into supply.

70 HM Treasury (2010) Infrastructure UK (2010) National Infrastructure Plan

Numerous canals fall within the Severn Trent Water region including the Shropshire Union Canal, the Llangollen Canal, the Grand Union Canal, the Worcester and Birmingham Canal and the Oxford Canal.

Surface Waters: Reservoirs and Lakes

In total, there are 64 reservoirs and large lakes within the Severn Trent region, including reservoirs such as Carsington Water, Draycote Water, Llyn Clywedog, Craig Goch reservoir (Elan Valley Reservoir system), Tittesworth Reservoir, Rutland Water and Ladybower Reservoir. **Figure C.3** shows the distribution of surface waters in the Severn Trent Water supply area. Impounding reservoirs provide 30% of the total volume of water Severn Trent Water put into supply.

Groundwater

Groundwater sources provide 35% of the total volume of water put into supply. The majority of groundwater is sourced from the Sherwood Sandstone aquifers.

Under the WFD there are two separate classifications for groundwater bodies; chemical status and quantitative status. A groundwater body will be classified as having poor quantitative status in the following circumstances; where low groundwater levels are responsible for an adverse impact on rivers and wetlands normally reliant on groundwater; where abstraction of groundwater has led to saline intrusion; and where it is possible that the amount of groundwater abstracted will not be replaced each year by rainfall. **Figure C.4** presents the quantitative status of the WFD groundwater bodies in the Severn Trent Water supply area. For a groundwater body to be at good status overall, both chemical status and quantitative status must be good.

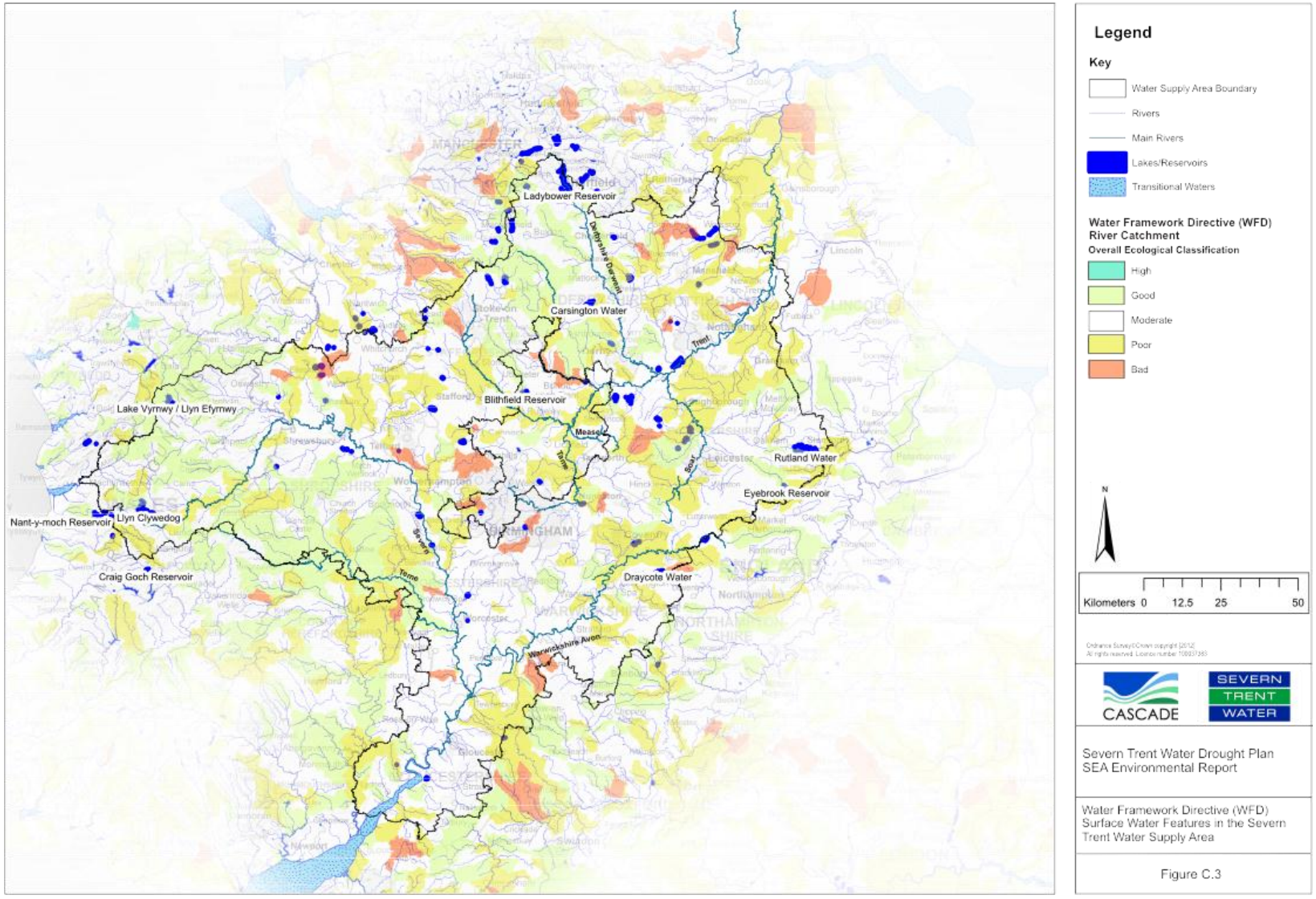
In the Severn Trent Water supply area the main reasons for poor groundwater quality status are high or rising nitrate concentrations, with some failures for pesticides and other chemicals. The main reason for poor quantitative status in groundwater is that abstraction levels exceed the volume of base flow discharge from groundwater bodies to rivers at times of low flow.

Estuaries

The Severn Estuary and Humber Estuary European Marine Sites[71], along with the Welsh River Wye estuary (part of the River Wye SAC which drains to the Severn

71 'European marine sites' is the collective term for SACs and SPAs that are covered by tidal water.

Estuary), are considered within the SEA due to the hydrological connectivity with Severn Trent water sources (i.e. including regulating reservoirs in the Severn catchment located within Wales (including Vyrnwy reservoir) and the Craig Goch (Elan Valley) reservoir and other abstractions from the Welsh River Wye catchment). All three estuaries are of international or European importance for nature conservation. The majority of the Severn Trent supply area falls within either the River Severn or the River Humber catchments. Therefore any activities within these catchments have the potential to influence the water environment in the Severn Estuary, Humber Estuary and their associated designated sites.


Ladybower Reservoir
Carsington Water
Blithfield Reservoir
Lake Vyrnwy / Llyn Efyrnwy
Nant-y-moch Reservoir
Llyn Clywedog
Craig Goch Reservoir
Rutland Water
Eyebrook Reservoir
Draycote Water
Derbyshire Derwent
Trent
Severn
Tame
Warwickshire Avon
Legend
Key
Water Supply Area Boundary
Rivers
Main Rivers
Lakes/Reservoirs
Transitional Waters
Water Framework Directive (WFD)
River Catchment
Overall Ecological Classification
High
Good
Moderate
Poor
Bad
N
Kilometers 0 12.5 25 50
CASCADE
SEVERN TRENT WATER
Severn Trent Water Drought Plan
SEA Environmental Report
Water Framework Directive (WFD)
Surface Water Features in the Severn
Trent Water Supply Area
Figure C.3

Water Quantity

A national review of abstraction licences has been undertaken by the Environment Agency through the CAMS process. CAMS areas are based on river catchment boundaries and generally overlap with Severn Trent Water's supply area. The CAMS work seeks to identify where additional abstractions can be made from rivers and groundwaters, where no additional abstractions can be made and where over-abstraction is possible through existing licensed abstractions. This has been achieved by identifying the 'resource availability status' for specific Water Resource Management Units (WRMUs) and Groundwater Management Units (GWMUs) within individual catchments. There are four categories of water availability:

- Water Available: Water is likely to be available at all flows including low flows. Restrictions may apply.
- No Water Available: No water is available for further licensing at low flows. Water may be available at higher flows with appropriate restrictions.
- Over-licensed: Current actual abstraction is such that no water is available at low flows. If existing licences were used to their full allocation they would cause unacceptable environmental damage at low flows. Water may be available at high flows with appropriate restrictions.
- Over-abstracted: Existing abstraction is causing unacceptable damage to the environment at low flows. Water may be available at high flows with appropriate restrictions.

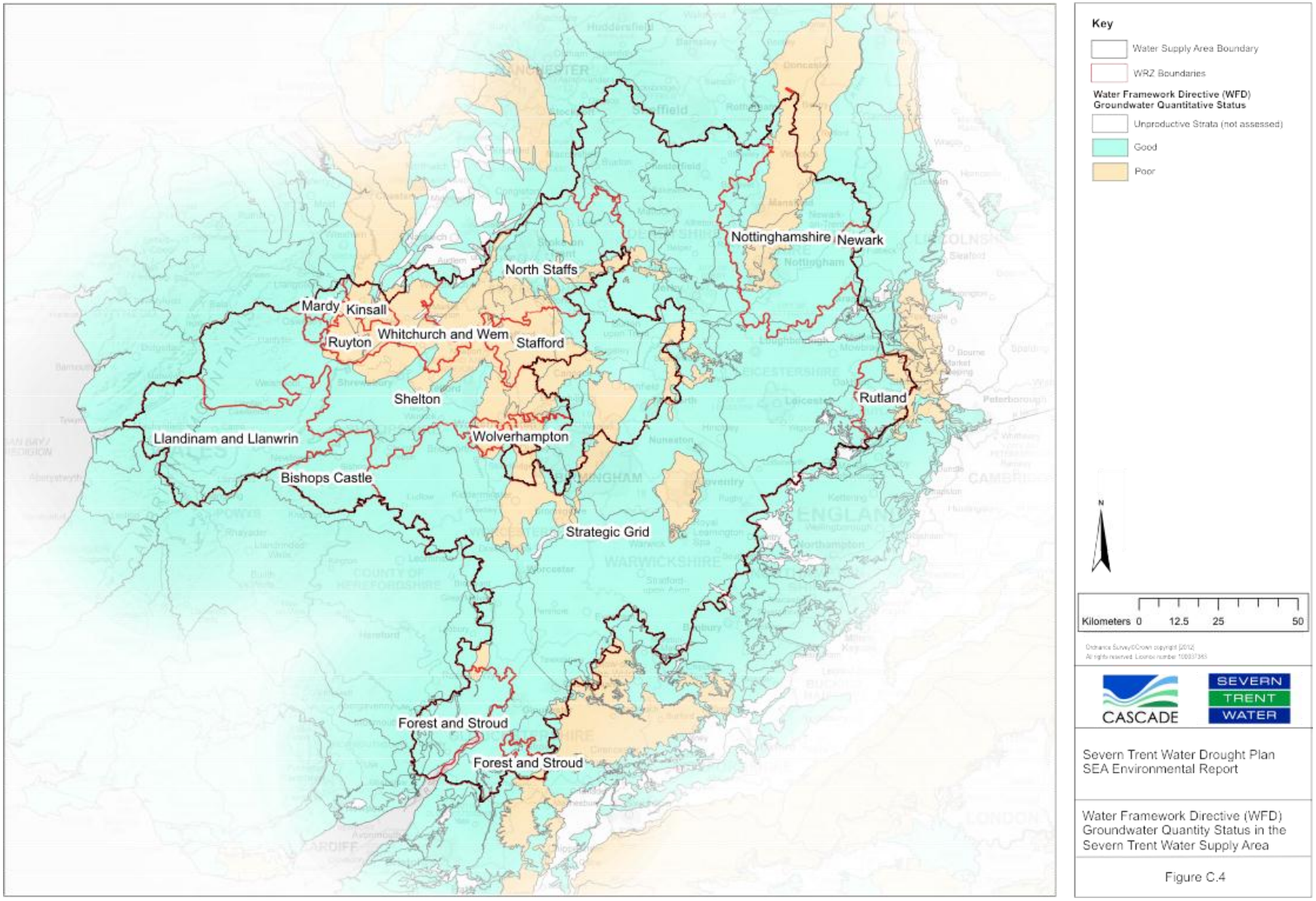
Table C.4 provides details on the water/groundwater availability status (as at 2009) for each Environment Agency Midlands Region CAMS area in the Severn Trent Water area (the Wye CAMS has also been included as it is critical to supplies). The CAMS status provides a useful summary of water resource pressures in the Severn Trent Water area, but it should also be recognised, in the context of the Severn Trent Water DP, that drought management options represent temporary rather than permanent changes to water supply or demand.

Table C.4 Resource Availability Status in the Severn Trent Water region, with relevant CAMS and CAMS Assessment Points (AP)

Resource availability status assessed by the Environment Agency in the CAMS process		
Relevant 2013 CAMS	**Relevant CAMS Assessment Point (AP)**	**Resource availability status**
Soar CAMS	AP1. River Soar (Littlethorpe)	Water Available
	AP2. River Sense	Water Available
	AP3. River Eye	Water Available
	AP4. River Wreake	Water Available
	AP5. Rothley Brook	Water Available
	AP6. Middle River Soar (Pillings Lock)	Water Available
	AP7. Kingston Brook	Water Available
	AP8. Lower River Soar (Kegworth)	Water Available
Lower Trent & Erewash CAMS	AP1. River Trent (Shardlow)	Water Available
	AP2. River Erewash (Sandiacre)	Water Available
	AP3. River Leen (Papplewick)	No Water Available
	AP4. River Leen (Triumph Road, Nottingham)	No Water Available
	AP5. River Trent (Colwick)	Water Available
	AP6. Dover Beck	No Water Available
	AP7. River Greet	No Water Available
	AP8. River Devon	Water Available
	AP9. River Trent (North Muskham)	Water Available
	AP10. Upper River Eau	Water Available
Idle and Torne CAMS (Doncaster, Worksop, Retford, Mansfield)	AP1. Upper River Meden (Church Warsop)	No Water Available
	AP2. Rivers Maun & Meden (Whitewater Bridge)	No Water Available
	AP3. Upper River Poulter (Cuckney)	No Water Available
	AP4. Oldcotes Dyke (Blyth)	No Water Available
	AP5.River Ryton (Worksop)	No Water Available
	AP6. River Idle (Bawtry Bridge)	No Water Available
	AP7. River Idle (West Stockwith)	No Water Available
	AP8. River Torne (Auckley)	No Water Available
	AP9. Three Rivers (Keadby)	No Water Available
Derbyshire Derwent CAMS (Derby, Belper, Buxton, Matlock)	AP1. Derwent Reservoirs	No Water Available
	AP2. River Noe	No Water Available
	AP3. Upper River Derwent (Chatsworth)	No Water Available
	AP4. River Wye	Water Available
	AP5. River Lathkill	No Water Available
	AP6.Middle River Derwent (Whatstandwell)	Water Available
	AP7. Upper River Amber	Water Available
	AP8. Lower River Amber (Ambergate)	Water Available
	AP9. River Ecclesbourne	Water Available
	AP10. Lower River Derwent (Derby St Mary's)	Water Available
	AP11.Markeaton Brook	Water Available
	AP12. Derby (Church Wilne)	Water Available
Tame, Anker & Mease (Burton on Trent, Tamworth, Hinckley, Nuneaton and Birmingham)	AP1.Tame u/s Bescot GS	Water Available
	AP2. Tame u/s Blythe	Water Available
	AP3. River Cole	Water Available
	AP4. River Blythe	Water Available
	AP5. River Anker	Water Available
	AP6. Bourne Brook	No Water Available
	AP7. River Tame d/s River Blythe to Trent and AP9. River Trent d/s River Tame to Dove	Water Available
	AP8. River Mease	Water Available
Worcestershire Middle Severn	AP1. River Worfe at Burcote	No Water Available
	AP2. Dowles Brook at Oak Cottage	No Water Available

Resource availability status assessed by the Environment Agency in the CAMS process		
Relevant 2013 CAMS	**Relevant CAMS Assessment Point (AP)**	**Resource availability status**
CAMS (Telford, Wolverhampton, Dudley, Kidderminster, Bromsgrove, Droitwich and Worcester)	AP3. River Stour at Stourbridge, AP4. River Stour at Smestow, AP5. River Stour at Caunsal, AP6. River Stour at Callows Lane, AP7.River Stour at Stourport-On-Severn	No Water Available
	AP8. River Salwarpe at Avonscroft (Bromsgrove), AP9. Hadley Brook at Wards Bridge, AP10. River Salwarpe at Harford Hill	No Water Available
Staffordshire Trent Valley CAMS (Stoke, Stone, Stafford, Cannock, Lichfield, Rugeley)	AP1. Trent to & incl. Strongford STW and AP2. River Trent u/s Sow	Water Available
	AP3. River Trent u/s Tame and AP5. River Sow inc. Doxey Brook	Water Available
	AP4. River Sow u/s Doxey Brook	Water Available
	AP6. Scotch Brook	No Water Available
	AP7. 8 and 9. River Blithe catchment from source to River Trent	No Water Available
	AP10. River Swarbourn (River Penk - Not an AP)	Water Available Water Available
Shropshire Middle Severn CAMS (Shrewsbury, Telford, Newport, Market Drayton Oswestry and Church Stretton)	AP1River Perry at Yeaton	Restricted Water Available for Licensing
	AP2 Rea Brook at Hookagate	
	AP3 River Tern at Ternhill	
	AP4 Coley Brook at Coley Mill	
	AP5 River Meese at Tibberton	
	AP6 River Roden at Rodington	
	AP7 River Tern at Walcot	
	AP8 Cound Brook at Cound Bridge	
Dove CAMS (Leek, Cheadle, Uttoxeter, Ashbourne)	AP1. River Manifold	Water Available
	AP2. River Dove u/s of the River Manifold	Water Available
	Aps 3. 4. 5. 9. 10. 11. 12. 13. Incl. the whole River Dove d/s of the Manifold confluence to the River Trent, excluding the River Churnet	Water Available
	AP6. River Churnet u/s of Leek STW	No Water Available
	AP7. River Churnet u/s edge of aquifer and AP8. River Churnet to River Dove	Water Available
Severn Corridor CAMS	River Severn upstream of Bewdley: AP1. Afon Clywedog, AP2. River Severn at Dolwen, AP3. River Severn at Abermule, AP7. River Severn at Montford, AP8. River Severn at Monkmoor, AP9. River Severn at Buildwas, AP10. River Severn at Bewdley	Water Available
	River Vyrnwy catchment: AP4. River Vyrnwy below reservoir, AP5. River Tanat at Llanyblodwel, AP6. River Vyrnwy at Llanymynech	No Water Available
	River Severn downstream of Bewdley: AP11. River Severn at Saxons Lode, AP12. River Severn at Deerhurst, AP13. River Severn at Hockcliffe.	No Water Available
Severn Vale CAMS	AP1. Careys Brook, AP2. Bushley Brook	No Water Available
	AP3. Glynch Brook	No Water Available
	AP4. Ell Brook	No Water Available
	AP5. River Leadon, AP6. Red Brook	No Water Available
	AP7. River Chelt	No Water Available
	River Frome catchment: AP8. Painswick Stream, AP9. River Frome, AP10. Nailsworth Stream, AP11. River Frome at Wheathurst, AP14. River Cam	No Water Available
	AP12. Westbury Brook, AP15. River Lyd	No Water Available
	AP13. Cinderford Brook	No Water Available
Warwickshire Avon CAMS (Coventry, Rugby, Warwick, Royal Leamington Spa, Stratford upon Avon, Redditch, Evesham)	AP1 Rugby (Rivers Avon and Swift)	Water Available
	AP2 Stoneleigh (River Sowe)	Water Available
	AP3 Stareton (River Avon)	Water Available
	AP4 Leamington (Rivers Leam and Itchin)	No Water Available
	AP5 Wellesbourne (River Dene)	Water Available
	AP6 Stratford and 10 Evesham (River Avon)	Water Available
	AP7 Alscot Park (River Stour)	Water Available
	AP8 Broom (River Arrow)	Water Available
	AP9 Offenham (Badsey Brook)	Water Available
	AP11 Hinton (River Isbourne)	Water Available

Resource availability status assessed by the Environment Agency in the CAMS process		
Relevant 2013 CAMS	**Relevant CAMS Assessment Point (AP)**	**Resource availability status**
	AP12 Wyre Piddle (Piddle Brook)	Water Available
	AP13 Besford Bridge (Bow Brook)	Water Available
	AP14 Upper Pound (River Avon)	Water Available
Teme CAMS (Tenbury Wells, Ludlow, Knighton, Craven Arms)	River Teme catchment upstream of Tenbury: AP1. Knighton, AP2. Bromfield, AP3. Tenbury, AP6. Redlake, AP7. Clun, AP8. Quinney B, AP9. Onibury, AP10. Corve and AP11. Ledwyche,	No Water Available
	River Teme catchment downstream of Tenbury: AP4. Knightsford, AP5. Worcester, AP12. Rea, AP13. Sapey Brook, AP14. Leigh Brook, AP15. Laughern Brook	No Water Available
Wye CAMS	WRMU 1: (the Lower Wye) WRMU 8 (Upper Wye) WRMU 10 (River Lugg) WRMU 17 (Eign/Yazor Brook)	No Water Available


Key
Water Supply Area Boundary
WRZ Boundaries
Water Framework Directive (WFD) Groundwater Quantitative Status
Unproductive Strata (not assessed)
Good
Poor
Nottinghamshire
Newark
North Staffs
Mardy
Kinsall
Ruyton
Whitchurch and Wem
Stafford
Shelton
Rutland
Llandinam and Llanwrin
Wolverhampton
Bishops Castle
Strategic Grid
Forest and Stroud
Forest and Stroud
N
Kilometers 0 12.5 25 50
CASCADE
SEVERN TRENT WATER
Severn Trent Water Drought Plan
SEA Environmental Report
Water Framework Directive (WFD) Groundwater Quantity Status in the Severn Trent Water Supply Area
Figure C.4

Water Quality

Historically water quality has been classified using the Environment Agency General Quality Assessment (GQA) system, but since 2007, water quality is classified according to a variety of measures as required by the WFD.

For surface waterbodies there are two separate WFD classifications: ecological and chemical. For a waterbody to be in overall 'good' status, both ecological and chemical status must be at least 'good'. The ecological measures include water quality, water quantity and the habitat (including the health of river insects and plants). These are scrutinised and an assessment made of the overall status. **Table C.5** summarises the key statistics for the catchments within the Severn Trent region.

Table C.5 Key statistics for WFD Catchments within the Severn Trent Water Supply Area [72]

RBD	Relevant RBMP catchment	% at good ecological status or potential		
		RBMP 2009	Target 2015	2012
Humber	Idle and Torne	7	7	7
	Derbyshire Derwent	28	30	34
	Dove	39	41	24
	Lower Trent and Erewash	5	5	8
	Staffordshire Trent Valley	6	10	2
	Tame and Anker Mease	3	3	5
	Soar	9	9	7
	Don and Rother	8	9	9
Severn	Teme	60	65	58
	Severn Uplands	44	57	46
	Shropshire Middle Severn	6	6	14
	Worcestershire Middle Severn	21	21	18
	Severn Vale	7	7	9
	Warwickshire Avon	11	11	10
	Wye	35	43	35
Western Wales	North West Wales Catchment	26	30	30
Anglian	Welland Catchment	24	24	25

For groundwater there are two separate classifications for groundwater bodies: chemical status and quantitative status. Each must be reported in addition to the overall groundwater body status. For a groundwater body to be at good status overall, both chemical status and quantitative status must be good. **Figure C.4** shows the WFD groundwater body quality status in the Severn Trent region.

72 Data source: http://data.gov.uk/dataset/wfd-surface-water-classification-status-and-objectives. Accessed26th February 2013.

In addition to assessing status, there is also a requirement to identify and report where the quality of groundwater is deteriorating as a result of pollution and which may lead to a future deterioration in status. As stated in Section 4.5.1 underground sources provide 30% of the total volume of water STWL put into supply. The majority of groundwater sources abstracted from are generally at poor status due to high abstraction.

The Environment Agency is over half way through an investigation programme aimed at reducing the uncertainty in the classification of waterbodies, identifying the reasons for failures and determining what needs to be undertaken to get to Good Status. The number of uncertain failures has been reduced from 8% to 5% and the number of failures where the cause is unknown has reduced from 17% to 6%[73]. **Table C.6** presents the main reasons for failure, and the contribution of each, specific to the Severn Trent region area. **Table C.6** shows that in the Severn Trent region 5.3% of waterbodies failing as a result of insufficient flow/abstraction. It is noted that most groundwater bodies cover large areas, which can include many failing surface water bodies.

73 Environment Agency (2011) Water Framework Directive: Reducing uncertainty in classification Progress report

Table C.6 Main reasons for waterbodies failing to achieve good ecological status or potential[74]

Reason for failure	Contribution (%)
Physical modification	15.3%
Diffuse source agriculture	19.1%
Flow / abstraction	5.3%
Diffuse source non-agriculture	17.8%
Point source water industry sewage discharge intermittent	5.7%
Point source water industry sewage discharge continuous	20.7%
Point source non-water industry	1.6%
Suspect data	5.3%
Unknown reason	7.8%
Natural	1.1%
Other	0.3%

Table C.6 suggests that diffuse source agricultural and non-agricultural pollution are considered the significant causes for failure in the Severn Trent region. There are both improvements and declines taking place with respect to the reduction of diffuse source pollution, the management of which is complex. For example nitrate levels in surface waters continue to decline in many of the watercourses in the West Midlands. Nitrate levels in some ground waters are increasing, but this is usually as a result of nitrates put into the system by past activity. The quantities of nitrogen based fertilisers used by UK farmers have fallen dramatically in recent years, as use becomes more targeted to the needs of the growing crop. A number of industry initiatives such as 'Tried and Tested' Nutrient Management Planning have been developed to help farmers reduce nitrogen inputs and increase profitability.

Bathing Waters

There are no bathing waters within the Severn Trent Water supply area. However, a number of bathing waters are located on or in proximity to estuaries that are in hydrological connectivity to the Severn Trent Water supply area (i.e. the Humber Estuary and the Severn Estuary). The bathing waters located in proximity to these estuaries (e.g. Cleethorpes, Humberston Fitties, Aberdyfi, West Kirby, Wallasey) have all passed standards for bathing water quality since 2007 and in many cases met the even higher standards associated with the Revised Bathing Water Directive. One exception to this was Aberdyfi which failed mandatory standards for bathing water quality in 2007.

Flood Risk

Flooding can result from rivers and the sea, directly from rainfall on the ground

74 Data provided by EA Midlands

surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources. The Environment Agency's Flooding in England report[75] and the Flooding in Wales report[76] highlight the baseline with regard to flood risk in the Severn Trent region. This is shown in **Table C.7** (and with comparison to the position for England and for Wales as a whole).

Table C.7 Properties in England Wales at risk of river and sea flooding, by risk category

Region	Number of properties at risk of flooding	Number of properties at significant risk of flooding
West Midlands	~190,000	~50,000
East Midlands	~475,000	~125,000
South West	~390,000	~125,000
Powys	~5,130	~2,220
Wales	**~143,300**	**~31,300**
England	**2,400,000**	**500,000**

In 2007, many of Severn Trent Water customers were affected by the severe flooding that occurred on the River Severn and the water supply impact arising from the flooding of the Mythe Water Treatment Works. The extreme floods of 2007 prompted the Pitt Review (2008) and the subsequent Flood and Water Management Act 2010. In 2008-2009, the Environment Agency spent approximately £427 million on building, improving and keeping flood defences such as managed river channels, walls and raised embankments, flood barriers and pumps in good condition, which reduced the risk of flooding to over 176,000 households across England. The Government further recognised the importance of investing in flood risk and coastal management and committed to increase public spending on it from £600 million in 2007-2008 to £800 million in 2010-2011. In Technical Advice Note (TAN) 15: Development and Flood Risk[77] the Welsh Assembly Government sets out a precautionary framework to guide planning decisions, advising caution in respect of new development in areas at high risk of flooding.

Climate change may have a significant effect upon future flood risk in the region. This is discussed further below and in Section 4.7.

Future Baseline

The WFD sets a target of aiming to achieve at least 'good status' in all waterbodies

75 Environment Agency (2009) Flooding in England: A National Assessment of Flood Risk
76 Environment Agency (2009) Flooding in Wales: A National Assessment of Flood Risk
77 Welsh Assembly Government (2004) Technical Advice Note (TAN) 15: Development and Flood Risk

and prevent deterioration by 2015. The WFD allows for an alternative objective to be set provided certain conditions are satisfied where the water body is not going to reach good status (setting a less than good objective) or where more time is needed beyond the timescale of that plan (setting a deadline beyond the timescale of the plan to achieve good status). Each time a river basin plan is developed (i.e. every six years) the WFD requires a review of any 'alternative objective' to ensure the evidence used to justify this has not changed. In the first RBMPs, most alternative objectives specified a delay in achieving 'good status' to 2027.

The NPPF[78] states that inappropriate development in areas at risk of flooding (in Flood Zone 1[79], Flood Zone 2[80], Flood Zone 3a[81] or Flood Zone 3b - the functional floodplain); should be avoided by directing development away from areas at highest risk. The NPPF requires that where development is necessary, it should be made safe without increasing flood risk elsewhere, as defined in the Technical Guidance to the NPPF[82]. The NPPF requires the application of a sequential, risk-based approach (operated through Strategic Flood Risk Assessment) to the location of development to avoid where possible flood risk to people and property and to manage any residual risk, taking account of the impacts of climate change. Following application of the Sequential Test, if it is not possible, consistent with wider sustainability objectives, for the development to be located in zones with a lower probability of flooding, the Exception Test can be applied if appropriate. This includes development for water-compatible uses (e.g. water transmission infrastructure and pumping stations) and essential infrastructure (e.g. water treatment works that need to remain operational in times of flood).

The Environment Agency Water Strategy Regional Action Plan for the Midlands Region[83] used future scenarios to look at future pressures on water resources. The scenarios consider a range of responses by Government, regulators, water companies, abstractors and individuals to the way that water is used and managed. They are not forecasts, but show a range of possible demands in the future. Under the worst case scenario, a further 1,025 Ml/d may potentially be necessary in the Severn (England) and Humber (south) River Basins by 2050 to meet the additional needs of the public, industry and agriculture. By 2050, climate change could reduce river flow by 10% to 15% on an annual average basis, and could reduce summer river flows by 50% to 80%. The Water Strategy Regional Action Plan for Midlands Region shows how the

78 Communities and Local Government (2012) National Planning Policy Framework
79 Low probability of river or sea flooding (<0.1%) which has critical drainage problems
80 Medium probability of river (1%-0.1%) or sea flooding (0.5%-0.1%)
81 High probability of river (>1%) or sea flooding (>0.5%)
82 Communities and Local Government (2012) Technical guidance to the National Policy Planning Framework
83 Environment Agency (2009) Water Resources Strategy – A Regional Action Plan for Midlands Region

actions within the Water Resources Strategy for England and Wales will be implemented locally. The action plan identified six key priorities for Midlands Region, including:

- Increase the number of agricultural high-flow storage reservoirs in over abstracted catchments.
- Increase the number of conjunctive use schemes in Midlands Region (conjunctive use is the combined use of groundwater and surface water sources, e.g. use of groundwater when rivers flows are low).
- All abstractions in Midlands Region to be sustainable. Investigate over 100 schemes and develop cost beneficial solutions for any abstractions having an adverse impact on the environment under the RSA programme.

The UK Climate Change Risk Assessment (CCRA) 2012 Evidence Report[84] draws together and interprets the evidence gathered by CCRA regarding current and future threats and opportunities for the UK posed by the impacts of climate change up until 2100. Findings of the assessment include:

- Increasing pressure on the UK's water resources due to changes in hydrological conditions, population growth and regulatory requirements to maintain good ecological status. Major supply-demand deficits were identified for five river basin regions including the Humber and Severn.
- Increases in water demand for irrigation of crops.
- Lower summer river flows across the UK due to warming and drying conditions.
- An increase in precipitation in winter months due to a combination of greater depths and more frequent heavy rainfall events - suggesting larger volumes of runoff with potential negative impacts on flood risk and sewer overflows in urban environments.
- Flash-flooding associated releases from combined sewer overflows (CSO) could in turn increase associated illnesses at the coast due to the varying occurrence of microbial pathogens in the marine environment.

Key Issues

The key issues arising from the baseline assessment for water are:

- The need to maintain and further improve the region's river, lake, reservoir and estuarine waters in terms of their ecology and uses.

84 Defra (2012) The UK Climate Change Risk Assessment 2012 Evidence Report

- The need to maintain and improve the quantity and quality of surface water and groundwater resources in the region.
- The need to sustain and improve the resilience, flexibility and sustainability of water resources in the region.
- The need to ensure sustainable abstraction, balancing the needs of consumers for a reliable supply of water with the protection of the environment.
- The need to reduce and manage flood risk.
- The need to ensure resilience of infrastructure against flood risk
- The need to ensure that people understand the value of water.

SOIL GEOLOGY AND LAND USE

Baseline

Soils

Soil is a fundamental natural resource on which life depends. It provides many essential services on which we rely including food production, water management and support for valuable biodiversity and ecosystems.

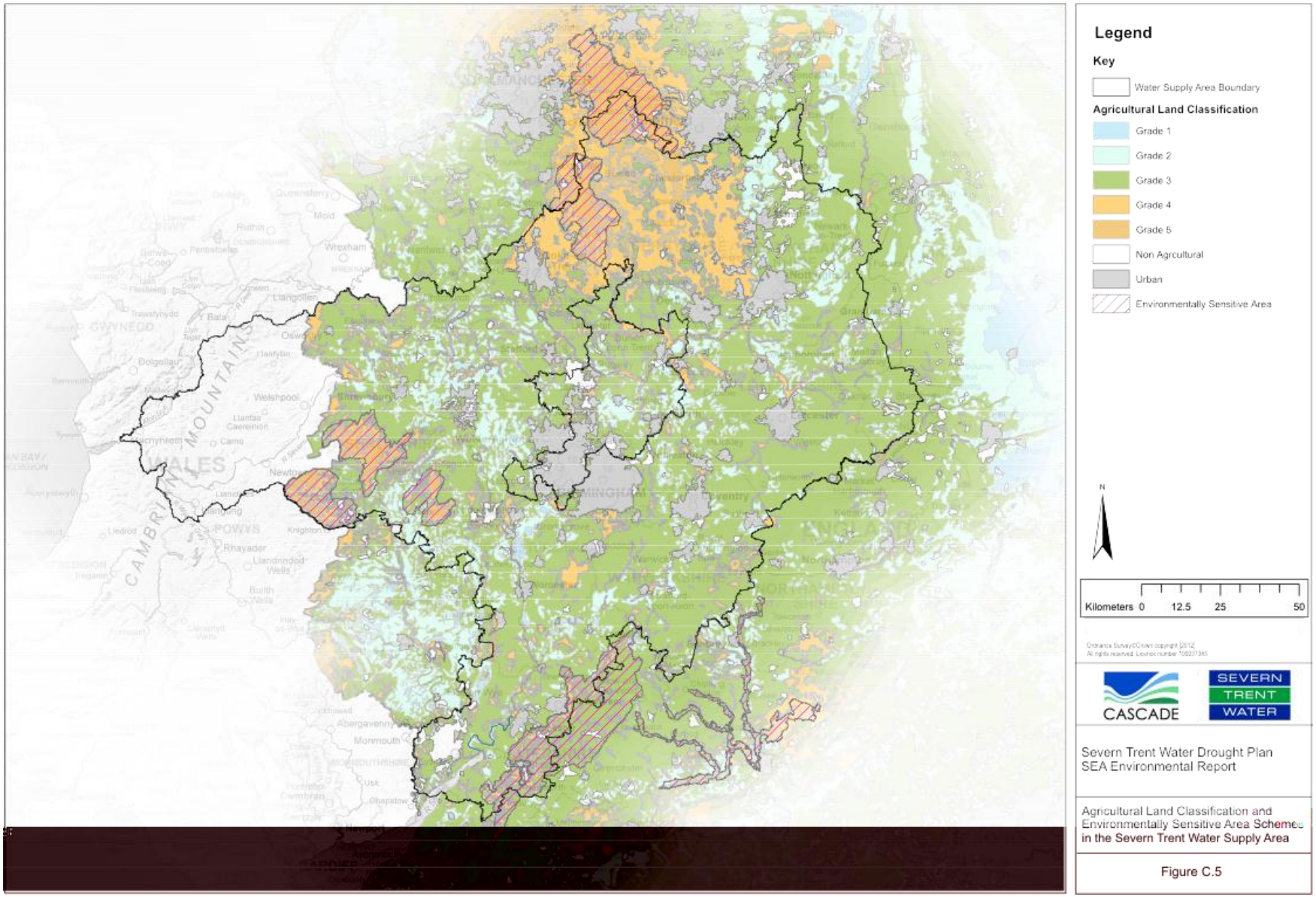
In terms of agricultural land quality, planning policy seeks to protect the best and most versatile agricultural land (defined as land in Grades 1, 2 and 3a of the Agricultural Land Classification).

Agricultural practices have a major influence on soil quality and good soil structure is beneficial to water retention and crop yield. It can be seen from **Figure C.5** that the majority of agricultural land in the English area of the Severn Trent Water supply area is classified as Grade 3. With pockets of higher grade soils, these are more extensive to the west of the Severn Trent Water area, for example in Shropshire and in the north east of the supply area in the Nottinghamshire WRZ. The large area mainly classified as Grade 4 in the north of the Severn Trent Water region is associated with the uplands of the Peak District. The large urban areas such as Birmingham can also be identified. Soil quality and structure is affected by changes in land use, groundwater levels and farming practices. Soil quality can influence run-off rates and therefore flooding and water quality.

Agri-environment schemes are operated within the Severn Trent Water region.

These include Environmentally Sensitive Areas (ESA)[85] (see **Figure C.5**) and Countryside Stewardship Schemes (CSS). Although both the ESA and CSS schemes have been closed and superseded by the Environmental Stewardship scheme, some existing agreements will continue to 2014. ESAs within the Severn Trent Water region include the Shropshire Hills, Cotswold Hills, Clun, South West Peak and North Peak.

85 The Environmentally Sensitive Areas Scheme was introduced in 1987 to offer incentives to encourage farmers to adopt agricultural practices which would safeguard and enhance parts of the country of particularly high landscape, wildlife or historic value. This has since been superseded by Environmental Stewardship, but existing agreements will remain until 2014: http://www.naturalengland.org.uk/ourwork/farming/funding/es/default.aspx


Legend
Key
Water Supply Area Boundary
Agricultural Land Classification
Grade 1
Grade 2
Grade 3
Grade 4
Grade 5
Non Agricultural
Urban
Environmentally Sensitive Area
N
Kilometers 0 12.5 25 50
CASCADE
SEVERN TRENT WATER
Severn Trent Water Drought Plan
SEA Environmental Report
Agricultural Land Classification and Environmentally Sensitive Area Schemes in the Severn Trent Water Supply Area
Figure C.5

Catchment Sensitive Farming (CSF) is a joint project between the Environment Agency and Natural England that began in 2006. It delivers practical solutions and targeted support to enable farmers and land managers to take voluntary action to reduce diffuse water pollution from agriculture to protect waterbodies and the environment. Severn Trent Water has worked with farmers to implement catchment management solutions to water quality issues in the Midlands Region. Thirteen draft catchment investigations (six groundwater and seven surface water) have been completed and have already delivered raw water protection improvements. Severn Trent Water's landholdings and land management within these areas can have influence over some catchments.

Geology

Severn Trent Water's water supply area is geologically diverse and includes a number of major aquifers including aquifers in the West Midlands and Nottinghamshire (e.g. Nottinghamshire Sherwood Sandstone) and smaller limestone aquifers in the Derbyshire and Cotswolds areas (Oolitic limestone of the Cotswolds).

England has been divided into areas with similar landscape character, which are called National Character Areas (NCAs); previously known as Joint Character Areas (JCAs). Character descriptions for each of the NCAs were produced and published in regional volumes to highlight the influences determining the character of the landscape, including surface geology. CCW is also in the process of finalising a draft Regional Landscape Character Map for Wales[86] which includes 48 regional scale landscape character areas. Each has a distinctive sense of place that enables it to be recognised as a single area. This is described for each area, according to its geological, habitats, historic, cultural and perceptual characteristics. Relevant NCA and Welsh regional landscape character area boundaries are shown in **Figure C.6**. A brief description of the key soil and geological characteristics of each of the main character areas that make up the majority of the Severn Trent Water supply area is provided in **Table C.8**.

Land Use

A brief description of the key land use characteristics of each of the main National Character Areas within which the WRZs fall is included in **Table C.8**.

86 Countryside Council for Wales (2012) Draft Regional Landscape Character Map for Wales

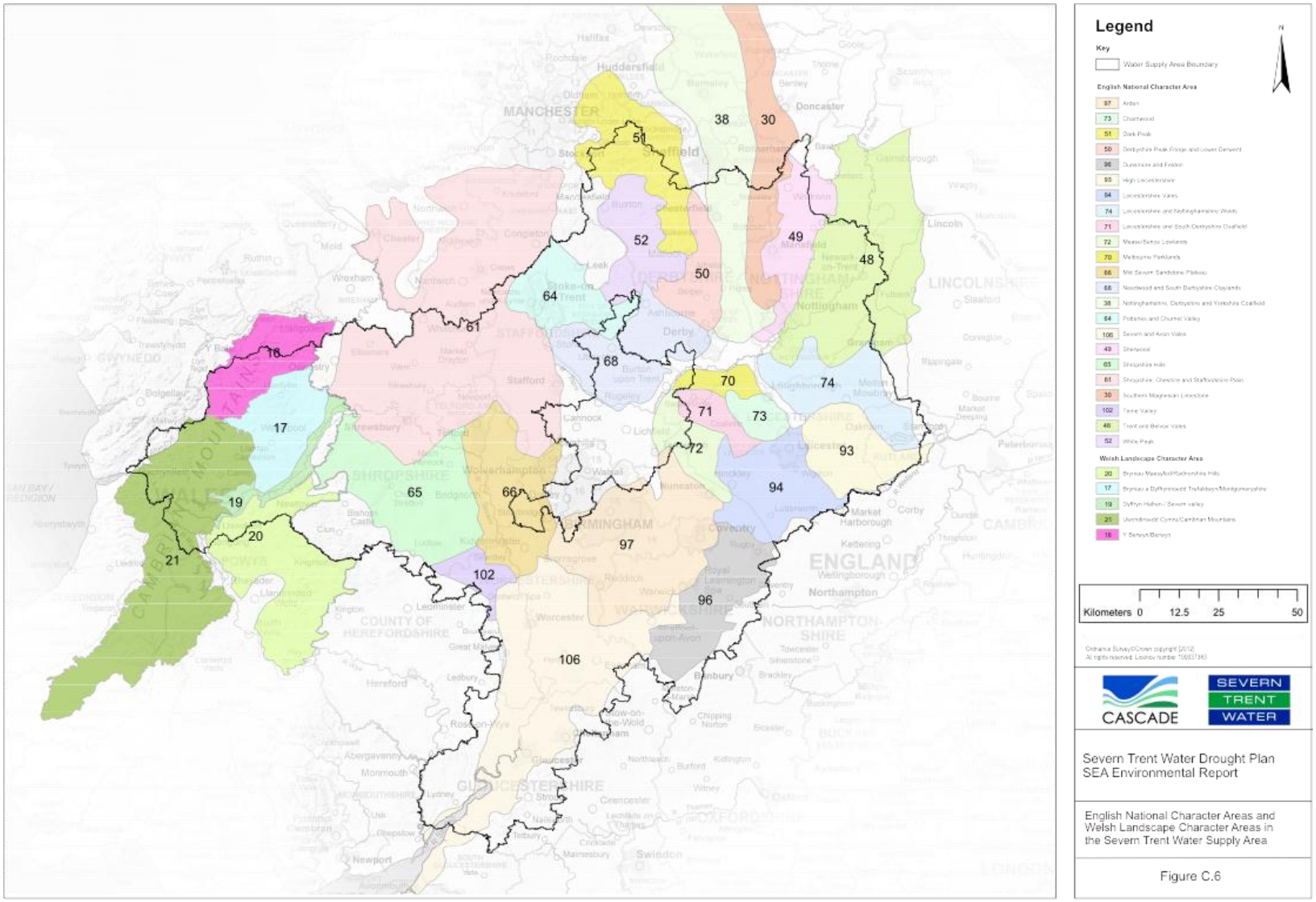

Legend
Key
Water Supply Area Boundary
English National Character Area
Welsh Landscape Character Area
Kilometers 0 12.5 25 50
CASCADE
SEVERN TRENT WATER
Severn Trent Water Drought Plan
SEA Environmental Report
English National Character Areas and Welsh Landscape Character Areas in the Severn Trent Water Supply Area
Figure C.6

Table C.8 Landscape Character Areas: Soil, geology and land use characteristics

Area	Characteristics
Severn and Avon Vales	Poorer wet soils and undulating landscape on the Mercia Mudstones in the Severn Valley and the heavy but fertile soils of the Lias Clay landscapes. Variety of land uses from small pasture fields and commons in the west to intensive agriculture in the east.
Dunsmore and Feldon	Mercia Mudstones and the Lower Lias clays which characterise the Arden and Feldon respectively. In Dunsmore, these formations are largely masked by glacial gravel deposits. The glacial deposits form a series of low plateaux and ridges comprising more recent lacustrine clays capped with porous and infertile gravels. The latter produced the light, sandy soils characteristic of much of the area. Farmland with large geometric fields divided by straight hedges with many hedgerow trees. Strong urban influence in some areas.
Arden	The Birmingham plateau comprises two uplifted blocks of older Palaeozoic strata. These are separated by an area of Triassic rocks, the Knowle Basin, which is mostly covered by glacial drift. The central area (Knowle Basin) is underlain by Mercia Mudstones and covered by glacial sands, gravels or till. The eastern area is a dissected plateau consisting of uplifted Carboniferous and older Palaeozoic and 'Precambrian' rocks. The southern part of the area is underlain by Mercia Mudstones, with outcrops of Arden Sandstone forming prominent escarpments. Light, sandy soils predominate in the north. Heavier clay soils and loams occur extensively in central and southern Arden. North-eastern industrial area based around former Warwickshire coalfield, with distinctive colliery settlements. North-western area dominated by urban development and associated urban edge landscapes. Away from the urban areas, the main land uses are pasture grassland and rough grazing, particularly on the thinner and more acidic soils, together with some remaining heathland on poorer soils in central and northern areas.
Mid Severn Sandstone Plateau	Former terraces of the Severn and Stour these rivers, consisting of patches of sand and gravel, overlie bedrock. Large areas are underlain by Permo-Triassic sandstones giving rise to brown sandy soil with brown earths and podzols which anciently supported heathlands. To the west, these give way to Upper Carboniferous marl, sandstone and conglomerate which support brown earth and argillic brown earth soils. To the south-east the Coal Measures of the Forest of Wyre Coalfield consist of mudstone, sandstone and thin coals. At the northern edge of the area, around Telford, similar rocks outcrop in the Coalbrookdale Coalfield.
Shropshire Hills	The Clee Hills lie on a plateau of Old Red Sandstone. These hills are formed of Carboniferous Millstone Grit and Coal Measures, capped by thick layers of dolerite or basalt. The sandstone plateau around the hills gives rise to red, silty, loam soils over silty clays. For the most part these are fertile and well-drained, supporting arable land and pasture. The hill tops have thin, stony soils supporting only rough moorland. Wenlock Edge and the dales to its side are formed from Silurian sedimentary rocks of varying hardness. The soils are very varied. The western and central uplands are formed from some of the oldest rocks in England. They include late Precambrian and succeeding Cambrian, Ordovician and Silurian formations. Areas of harsh upland environment, with bleak, rugged peaks. The soils of the higher parts of the uplands tend to be acidbrown and podsolised, well-drained and leached of nutrients. Their infertility supports only heathland and rough pasture. Lower-lying areas have gleyed soils and leached brown soils, many underlain by glacial till. These are poorly drained but potentially fertile, and support arable crops where artificially drained. More acid, sandy or brown sandy loams also occur locally.

Area	Characteristics
Shropshire, Cheshire and Staffordshire Plain	The Plain is formed from Triassic sandstones and marls but these are overlain by glacial deposits, largely consisting of boulder clay, with local deposits of silt, peat, sand and gravels. Close by are the sandstones of the Carboniferous Coal Measures which have been affected by glacial activity and have formed small-scale hummocky ridges and valleys, as around Maer. These sandstones run south-west from Newcastle towards Shrewsbury. A unified rural landscape, dominated by dairying, with strong field patterns, merging with more mixed and arable farming to the north and south-east. Extractive industries generally small scale but widespread - sand, gravel, salt, sandstone, peat.
Potteries and Churnet Valley	The core of this area are the hills, heavily dissected by the Churnet Valley, which are associated with Carboniferous and Triassic sandstones, overlain in the main with brown earth and podzols. To the north-west, towards Biddulph Moor and Mow Cop, outlying sandstone outcrops of the high Millstone Grit moors, with stagnogley and peaty soils give rise to deeply dissected moorland plateaux. Open moorland and rough grazing on higher ground. Sprawling industrial towns of the Potteries forming a major conurbation.
White Peak	The Carboniferous Limestone of the White Peak can be subdivided into three distinct types, each indicative of a different depositional environment and producing different landscapes today. The most common over much of the plateau area is the 'shelf' limestone, then, in the south-west of the area, is the 'basin' limestone and the least common is the 'reef' limestone, found within the wider basin limestone area, which is rich in fossils.
Nottinghamshire, Derbyshire and Yorkshire Coalfield	The area is underlain by Coal Measures which consist mainly of mudstone with beds of sandstone and many seams of coal. Major rivers crossing the area have carved broad valleys floored by fertile alluvial deposits and glaciation has contributed to the shaping of some valleys such as the Aire Valley near Leeds. Substantial areas of intact agricultural land in both arable and pastoral use. Ever present urban influences from major cities, smaller industrial towns and mining villages.
Trent and Belvoir Vales	Underlying most of the Trent valley are the Mercia Mudstones, with Triassic clays to the south and east. The Mercia Mudstones form the low escarpment that runs north-south from Gringley-on-the-Hill to Nottingham along the Sherwood boundary. The Vale of Belvoir is contained in the south by the low but marked Rhaetic escarpment formed of Upper Triassic limestones and shales. The Mudstones give rise to fertile red-brown soils although in places bands of harder siltstones occur which form rocky outcrops and stoney soils. Glacial activity has had an influence on the landform and soils of the area. Open, arable or mixed farmed landscape, strongly rural in feel, with trimmed hedges and few hedgerow trees; woodlands only locally significant.
Leicestershire and Nottinghamshire Wolds	The Leicestershire and Nottinghamshire Wolds are dominated by a thick layer of glacial till which, for most of the area, is underlain by the clays of the Lower Lias. At its western edge the underlying Rhaetic mudstones and limestones of the Upper Triassic form a low but steeply inclined escarpment against the Mercia Mudstones Group to the west. Prominent outliers occur at Gotham West and Leake Hills. The blanket of glacial till, and the moderately fertile soils to which it gives rise, have been a dominant influence on the development of the landscape. Exposed, open, rather bleak ridge tops, often in arable use.
High Leicestershire	The area is underlain by Lias clays of Lower Jurassic age. Much of the land is covered by thick deposits of boulder clay (glacial till). In many places, boulder clay has been eroded down to the more freely-draining and easily cultivated glacial sands and gravels. It is on these outcrops that many of the ancient villages like Kings Norton and Houghton on the Hill lie. Elsewhere, and on the Lias clays, the soils can be heavy and intractable.

Area	Characteristics
Northamptonshire and Leicestershire Vales	The western part of this large and complex area is underlain by the Mercia Mudstones. East of the river Soar, these strata are overlain by Rhaetic mudstones and limestones which do not form a significant scarp. To the east, the Lower Lias mudstones form an extensive area overlain by thick deposits of boulder clay (glacial till) which begin to thin out to the east, exposing the Middle and Upper Lias which emerge beyond Husbands Bosworth. To the east of the Northamptonshire Clay Wolds, the younger, harder rocks of the Inferior Oolite extend south-west to north-west through Northampton and Corby, juxtaposed with outcrops of the Great Oolite and Cornbrash along the Nene Valley.
Bryniau a Dyffrynnoedd Trefaldwyn/Montgomeryshire Hills and Vales	Bedrock geology is defined primarily by Silurian slates, mudstone and shales to the boundary with the Berwyn to the north, with Silurian rocks of the Wenlock and Ludlow Series to the centre of the area. Soils include well drained loams on the higher ground and seasonally wet silty soils over the shales, with deep loams overlaying the river alluvium deposits of the principal river valleys. Land use is predominantly pastoral agriculture, with lowland pasture in the river valleys and hill sheep farming on the upper valley sides and ridges.
Y Berwyn/Berwyn	Bedrock geology is predominantly Ordovician argillaceous slates and shales of the Caradoc Series in the western and central part of the area, which are contiguous with the dramatic upland spine incorporating Cadair Berwyn. Drift geology is confined to glacial deposits in the Tanat valley, although blanket peat overlays upland areas near Cadair Berwyn. Peat soils overlay the geology of much of the area, giving rise to extensive areas of upland moorland, with areas of well drained fine loamy / silty soils associated with the pastoral valleys that dissect parts of the area. Predominant land cover is upland moorland and grassland, interspersed with areas of lower lying pasture, field boundary hedgerows and deciduous woodland associated with the river valleys such as the Tanat. Large scale upland coniferous forest is also present.
Uwchdiroedd Cymru/Cambrian Mountains	A band of resistant Silurian grits forming a vast upland, rolling, windswept plateau of moorland hills and incised valleys at the heart of Wales. Thin soils support extensive tracts of sheep grazed grassy moorland – the smooth slopes are interspersed with bracken scrub, wind blown oaks and angular blocks of coniferous forestry. Upland peat deposits give rise to large areas of blanket bog, a UK BAP priority habitat, and to pools of open water.

Future Baseline

The vision of Defra's Soils Strategy for England[87] is for all England's soils to be managed sustainably and degradation threats tackled successfully by 2030. This will improve the quality of England's soils and safeguard their ability to provide essential services for future generations.

One of the core planning principles of the NPPF is to encourage the effective use of land by reusing land that has been previously developed (brownfield land), provided that it is not of high environmental value. The NPPF also places great importance on Green Belt policy, the aim of which is to prevent urban sprawl by keeping land permanently undeveloped. Green Belt serves five purposes: to check the unrestricted sprawl of large built-up areas; to prevent neighbouring towns merging into one another; to assist in safeguarding the countryside from encroachment; to preserve the setting and special character of historic towns; and to assist in urban regeneration, by encouraging the recycling of derelict and other urban land.

The Water White Paper describes the Government's intentions to take forward a catchment-based approach to water quality and diffuse pollution and work towards Common Agricultural Policy reforms that will promote the farming industry's role as custodian of the natural environment[88]. The Water White Paper also identifies that the strategic policy statement for Ofwat and revised social and environmental guidance will give a strong steer on Government support for approaches that offer good value for customers and the potential to prevent and manage future risks to drinking water quality.

Soil quality and structure is affected by changes in land use, groundwater levels and farming practices. Soil quality can influence run-off rates and therefore flooding and water quality. Severn Trent Water has been undertaking catchment management investigation work and pilot studies show where catchment solutions could offer viable alternatives to future treatment investment. Early indications are that catchment management solutions could be successful in 22 groundwater catchments, five surface water catchments and within sub-catchments of the River Severn. Thirteen draft catchment investigations (six groundwater and seven surface water) are now completed and have already delivered raw water protection improvements. Severn Trent Water is developing plans for the period 2015 to 2020 for catchment solutions for Tittesworth, Avon and Leam, Brockhill, Pinnock, Cropston, Bamford, sub-catchments of the River Severn (through CSF), and Staunton Harold.

Key Issues

87 Defra (2009) Safeguarding our soils – A Strategy for England
88Defra (2011) Water for Life - Water White Paper

The key sustainability issues arising from the baseline assessment for soil, geology and land use are:

- The need to protect geological features of importance and maintain and enhance soil function and health.
- The need to make use of previously developed land (brownfield land) and to reduce the prevalence of derelict land in the region.
- The need to manage the land more holistically at the catchment level, benefitting landowners, other stakeholders, the environment and sustainability of natural resources.
- The need to protect, maintain and enhance peat land and organic soils within the Severn Trent region.

AIR AND CLIMATE

Baseline

Local Air Quality

The DP options may involve construction of temporary assets such as pipelines and pumping stations as well as increased pumping and treatment of water at certain existing sites to help maintain essential water supplies. Some demand management options may involve additional vehicle movements. Therefore there is the potential for negative effects on air quality through emissions associated with temporary construction activity (on site and transportation of materials) or through the operation of some of the drought management options.

In 1997, the UK became the first country in Europe to develop an air quality strategy. The Strategy has undergone a series of reviews – the latest version was published in 2007[89]. The Strategy includes UK air quality standards and objectives for reducing levels of health-threatening pollutants. These include benzene, 1,3-butadiene, carbon monoxide, lead, nitrogen dioxide, particles, sulphur dioxide, ground level ozone, and PAH. The 2007 revision does not remove any of the objectives set out in the previous strategy or its addendum, apart from replacing the provisional 2010 PM_{10}[90] objective with the exposure reduction approach and a new ozone (O_3) objective to protect ecosystems, in line with the EU target value set out in the Third Daughter Directive.

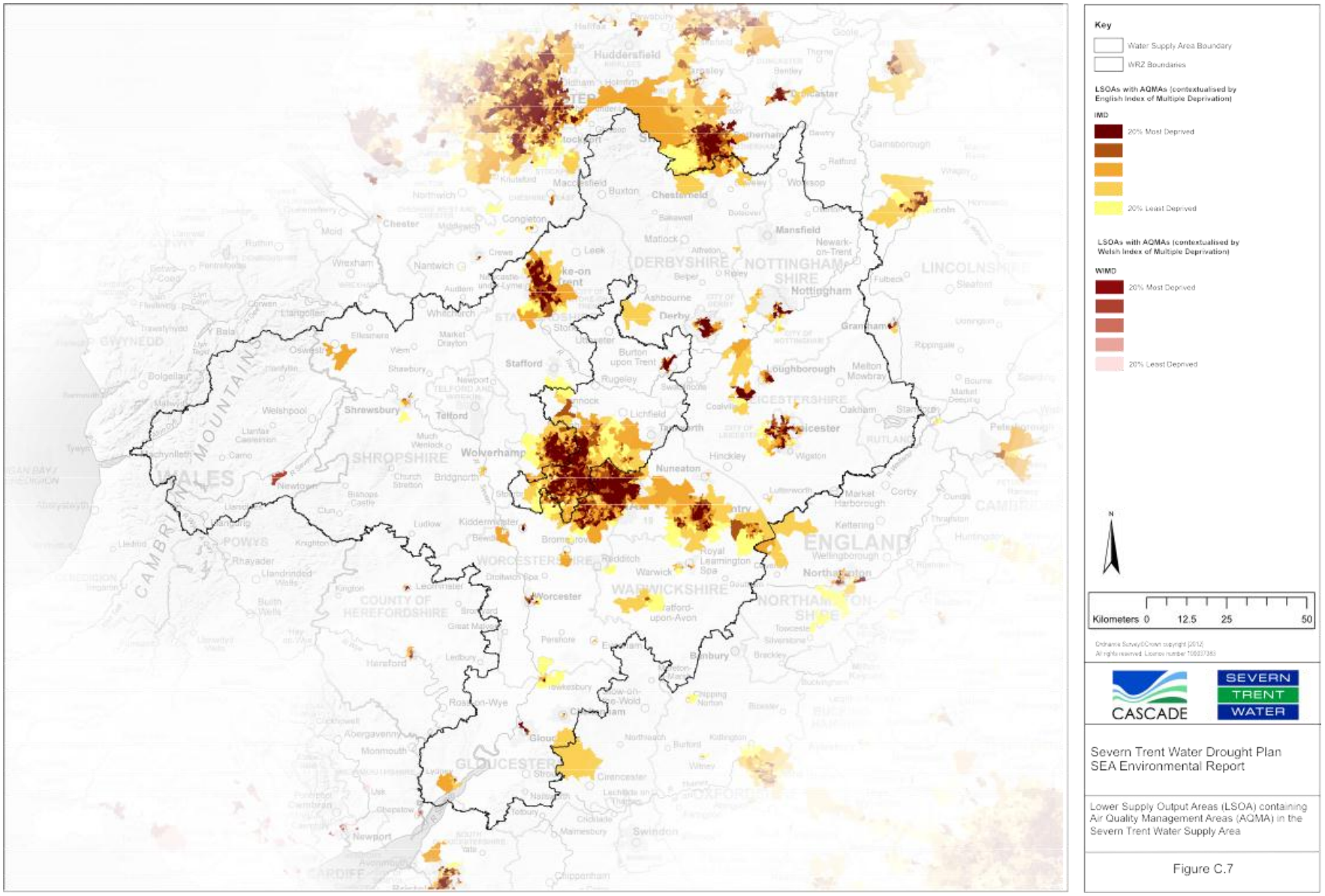
89 Defra (2007) The Air Quality Strategy for England, Scotland and Wales

90 Particulates with a diameter of 10μm or less

One of the main components of the UK Air Quality Strategy is Local Air Quality Management (LAQM). Since 1997, all local authorities have been assessing the air quality in their area and, where a problem is found, action plans have been developed to address the situation. Under LAQM, local authorities must investigate the levels of pollution in their area. Through data collection and modelling a process of 'review and assessment' is used to assess whether National Air Quality Objectives are likely to be breached in their target year. If, after carrying out review and assessment, a local authority finds that one or more of the National Air Quality Objectives is likely to be breached, it is obliged by law to declare an Air Quality Management Area (AQMA).

The air quality baseline situation can therefore be best described through reference to the local authorities in the Severn Trent Water WRZs that have declared AQMAs. There are 68 AQMAs in the Severn Trent Water supply area. Lower Super Output Areas[91] that contain AQMAs within their boundaries are illustrated on **Figure C.7** (Index of Multiple Deprivation rank is indicated for context). The majority of the AQMAs in the UK have been declared because of emissions from road transport.

91 Super Output Areas (SOAs) are a set of geographical areas developed following the 2001 census. The aim was to produce a set of areas of consistent size, whose boundaries would not change, suitable for the publication of data such as the Indices of Deprivation. They are an aggregation of adjacent Output Areas with similar social characteristics. Lower Layer Super Output Areas (LSOAs) typically contain 4 to 6 OAs with a population of around 1,500.


Key
Water Supply Area Boundary
WRZ Boundaries
LSOAs with AQMAs (contextualised by English Index of Multiple Deprivation)
IMD
20% Most Deprived
20% Least Deprived
LSOAs with AQMAs (contextualised by Welsh Index of Multiple Deprivation)
WIMD
20% Most Deprived
20% Least Deprived
N
Kilometers 0 12.5 25 50
CASCADE
SEVERN TRENT WATER
Severn Trent Water Drought Plan
SEA Environmental Report
Lower Supply Output Areas (LSOA) containing Air Quality Management Areas (AQMA) in the Severn Trent Water Supply Area
Figure C.7

Climate

Climate monitoring and risk assessments have improved significantly over the last two decades but there are still limits to the understanding of future climate risks. Irrespective of future 'greenhouse gas' emissions, a certain amount of global warming will occur due to the inertia in the global climate system. Mitigation through reduction in greenhouse gas emissions will contribute to risk reduction over the long term (100 years). Adaptation to climate change is needed to reduce the costs and damages of potential impacts and to take advantage of opportunities that result from a changing climate[92].

The 2009 UK Climate Projections (UKCP09) estimate that summers in the East Midlands, West Midlands and Wales will be hotter and drier and the winters warmer and wetter. The South West region is not included because it represents only a very small area of the Severn Trent supply area. **Table C.9** presents the key findings of UKCP09 projections using a high emissions scenario, which represents the worst case, and the best central estimate for a summary of the projected climate change in the region, as presented in Severn Trent Water's Adaption to Climate Change Report (2011)[93].

Table C.9 Key findings of UKCP09 projections using high emissions scenario[94]

Timeslice	**2020**			**2050**			**2080**		
Variable	**Wales**	**West Midlands**	**East Midlands**	**Wales**	**West Midlands**	**East Midlands**	**Wales**	**West Midlands**	**East Midlands**
Summer mean temperature is likely to rise, with a change in °C of:	1.3	1.4	1.4	2.8	2.8	2.9	4.5	4.4	4.7
Summer mean precipitation is likely to decrease, with a percentage change of:	-4%	-4%	-4%	-17%	-16.6%	-17.1%	-26%	-25.1%	-25.8%
Winter mean temperature is likely to rise, with a change in °C of:	1.2	1.2	1.3	2.3	2.3	2.5	3.3	3.4	3.6
Winter mean precipitation is likely to increase, with a percentage change of:	5%	6%	6%	13%	14%	16%	26%	23%	25%

Greenhouse Gases

92 Defra (2012) The UK Climate Change Risk Assessment 2012 Evidence Report
93 STWL (2011) Adaption to climate Change Report - A response to the Climate Change Act's Adaptation Reporting Power
94 Defra (2012) UKCP09: http://ukclimateprojections.defra.gov.uk/content/view/2167/499/

The predominant greenhouse gas of interest is carbon dioxide (CO_2). National and regional CO_2 emissions totals and how they are apportioned to their source categories are provided in **Table C.10**, together with comparison to the UK position as a whole.

Table C.10 Carbon Dioxide Emissions by Area (2010)[73]

Region	Total	Percentage Change since 2005	Percentage Contribution by Source Sector		
	Annual CO_2 Emissions / kilotonnes		Industry & Commercial	Domestic	Road Transport
West Midlands	34,444	-10%	39%	36%	25%
East Midlands	30,544	-9.4%	40%	33%	27%
Wales	22,322	-10.7%	42%	34%	24%
South West	33,565	-10.3%	37%	37%	26%
UK	**411,883**	**-8.5%**	**41%**	**35.5%**	**23.5%**

The DP options could influence CO_2 emissions through additional pumping and treatment requirements. Severn Trent Water's greenhouse gas emission intensity (reported as tonnes of CO_2 equivalent per Ml of water put into supply and wastewater treated (CO_2e/Ml)), were under 400 $kgCO_2e$/Ml and 500 tonnes CO_2e/Ml respectively in 2010/2011[95]. These figures are similar to those quoted for the previous year, when Severn Trent Water's performance was better than the industry average for wastewater treated (700 $kgCO_2e$/Ml), but slightly below the industry average for water put into supply (350 $kgCO_2e$/Ml).

Future climate change will influence processes within the hydrological cycle such as runoff and evapotranspiration. The potential impact of climate change on water resources and demand in the Severn Trent region is summarised in **Table C.11**.

Table C.11 Potential Impact of Climate Change on Water Resource and Demand in the Severn Trent region

Sector	Impact
Water Resources (i) water supply	Reduction in yields, either in total or at certain times of the year. Increased evaporation losses from surface water stores. Increased risk of algal blooms and pollution in reservoirs. Increased risk of flooding to Severn Trent Water's infrastructure and the potential for consequential disruption to water supply, and potential pollution incidents.
(ii) water demand	Increase in demands in summer months leading to increase in average and peak requirements. Increased pressure on treatment and distribution system.

95 Water UK (2010) Sustainability Indicators 2010-2011 Report

Sector	Impact
Flood management	Increased riverine flood risk and storm occurrence due to increased rainfall, leading to reduction in safety standards. Improvements and higher specifications required for flood defences, urban drainage and rainwater disposal.
Water quality management	Lowered water quality in lowland rivers, with implications for instream ecosystems and water abstractions. Altered potential for polluting incidents. Increased potential for combined sewer overflows.
Navigation	Lower summer flows leading to reduced navigation opportunities in rivers and canals.
Aquatic ecosystems	Altered habitat potential, with species at their environmental margins most affected.
Water-based recreation	Impacts through changes in river flows and water quality.

Adaptation to Climate Change

The UK Climate Change Risk Assessment (CCRA) 2012 Evidence Report[96] draws together and interprets the evidence gathered by CCRA regarding current and future threats and opportunities for the UK posed by the impacts of climate change up until 2100. Overall, the findings of the CCRA indicate that the greatest need for early adaptation action (i.e. within the next 5 years) is in the following areas:

- Flood and coastal erosion risk management
- Specific aspects of natural ecosystems, including managing productivity and biodiversity (the management of forest pests and diseases, low summer river flows and the movement of plants and animal species are all highlighted as high priorities for action)
- Managing water resources, particularly in areas with increasing water scarcity
- Overheating of buildings and infrastructure in the urban environment
- Health risks associated with heatwaves and other risks that may affect the NHS
- Opportunities for the UK economy, particularly to develop climate adaptation products and services.

In response to the Climate Change Act 2008, Severn Trent Water produced an Adaption to Climate Change Report (2011)[97], detailing an assessment of the impact of climate change for Severn Trent Water operations and proposals and policies for adapting to climate change in order to exercise its functions as a water and

96 Defra (2012) The UK Climate Change Risk Assessment 2012 Evidence Report
97 STWL (2011) Adaption to Climate Change Report - A response to the Climate Change Act's Adaptation Reporting Power

wastewater company. The report presents a risk assessment of 52 identified potential climate change impacts to its operations; those identified as highest priority are briefly described below.

- Pressure on ecological flow indicators – the impact of warmer and drier summers on ecological flow indicators (the key indicators are the populations of fish, invertebrates, macrophytes, phytobenthos found in rivers) in terms of river flows and our groundwater operations.

- Raw water availability – the impact of warmer and drier summers on river levels, raw water availability and our groundwater operations.

- Marginal cost of water – the impact of drier summers on the marginal cost of water.

Future Baseline

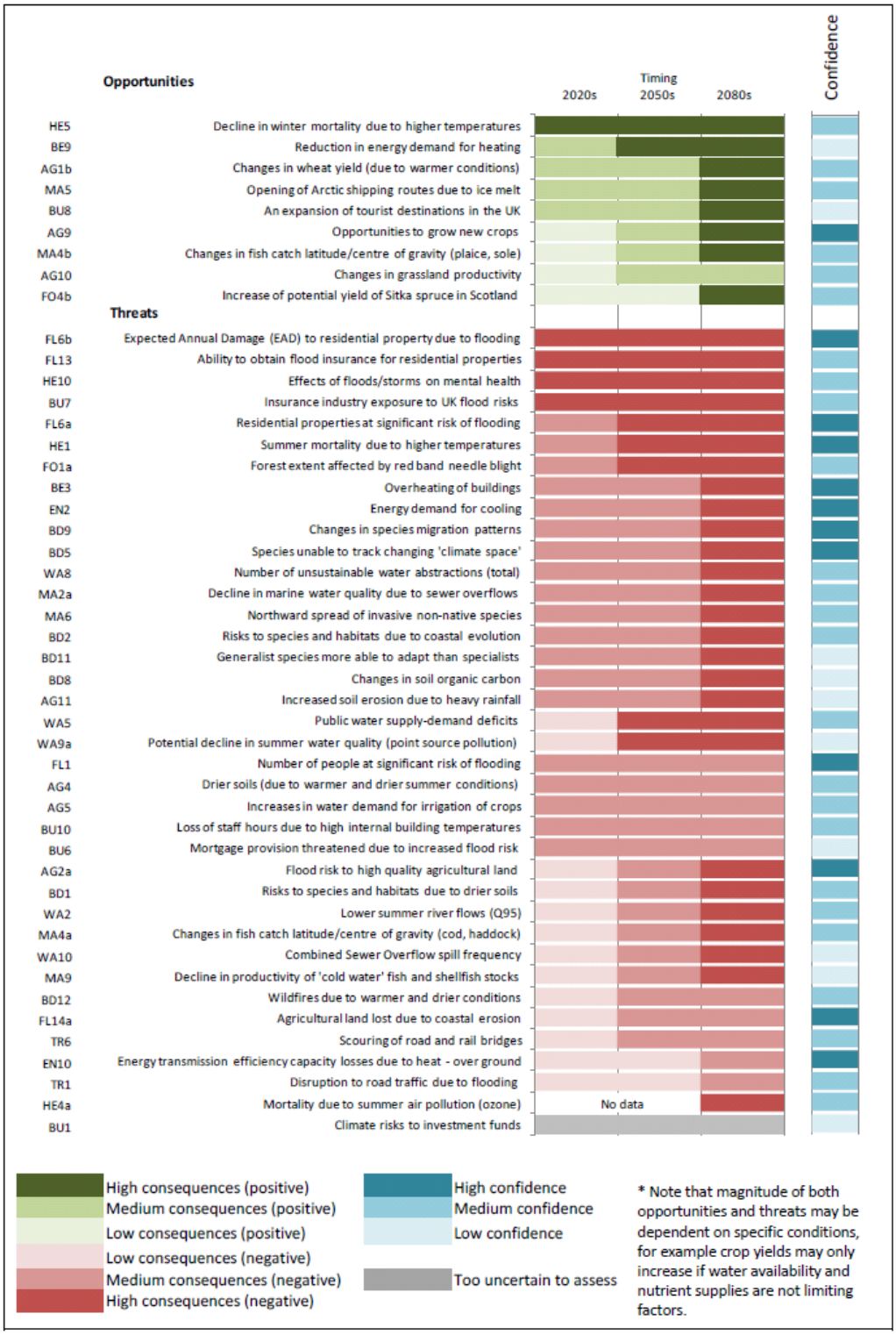
Air quality objectives are being achieved for many pollutants (lead, benzene, 1,3-butadiene and carbon monoxide (CO)). However, measurements show that long-term reducing trends for NO_2[98] and PM_{10} are flattening or even reversing at a number of locations, despite current policy measures. Projections suggest with a high degree of certainty that objectives for PM_{10}, NO_2 and O_3 will not be achieved by 2020[99].

In contrast to this trend, Government and international targets indicate significant cuts in greenhouse gas emissions will take place by 2020.

The CCRA considered more than 700 risks associated with climate change and selected 100 risks for detailed review. A selection of threats and opportunities identified under the 'medium scenario' are summarised in **Figure C.8**. These included public water demand-supply deficit, lower summer river flows, number of unsustainable water abstractions (total), northward spread of invasive non-native species, increased soil erosion due to heavy rainfall and an increase in water demand for irrigation of crops.

98 Nitrogen dioxide
99 Defra (2007) The Air Quality Strategy for England, Scotland and Wales

Figure C.8 Summary of Natural Environment Impacts with an Indication of Direction, Magnitude and Confidence (CCRA, 2012)



Key Issues

The key sustainability issues arising from the baseline assessment for air and climate are:

- The need to reduce air pollutant and greenhouse gas emissions arising from industrial processes and transport and limit air emissions to comply with air quality standards.

- The need to mitigate against climate change through the reduction in greenhouse gas emissions in order to contribute to risk reduction over the long term.

- The need to adapt to the impacts of climate change for example through management of flood risk, sustainable water resource management, specific aspects of natural ecosystems (e.g. connectivity) as well as accommodating potential opportunities of climate change.

ARCHAEOLOGY AND CULTURAL HERITAGE

Baseline

DP options could affect historic landscape character and historic structures associated with the water environment and the historical context of their setting. Archaeological remains are also sensitive to changes in water quality, water levels (for example waterlogged deposits), pollution and land use practices.

The NPPF defines the "historic environment" as:

All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora.

Nationally important archaeological sites are statutorily protected as designated heritage assets. **Table C.12** lists the designated heritage asset count nationally, regionally and for the Severn Trent region.

Table C.12 Designated Heritage Assets

Asset	England	Wales	West Midlands	East Midlands	South West	Severn Trent Region
World Heritage Site	18	5	2	1	4	2
Scheduled Monuments	19,749	4, 200	1,423	1,512	6,984	2,699
Conservation Areas	-	-	773	1,101	1,567	not available
Listed Buildings	375,121	29,952	31,481	29,631	89, 457	51,150
Registered Historic Parks and Gardens	1,610	378	150	138	294	242
Registered Historic Battlefields	43	-	6	5	8	9*
Protected Historic Wrecks	46	7	0	0	23	0

Source: English Heritage: Heritage counts 2011 (*designated assets were identified from GIS datasets available from English Heritage at http://services.english-heritage.org.uk/NMRDataDownload/)

The NCAs and the draft Welsh regional landscape character areas[100] described in Section 4.6 also include consideration of historic and cultural influences on the landscape. The key historic and cultural characteristics of each NCA or Welsh regional landscape character area are included in **Table C.13** below. Relevant NCA and Welsh regional landscape character area boundaries are shown in **Figure C.6**.

100 Countryside Council for Wales (2012) Draft Regional Landscape Character Map for Wales

Table C.13 Landscape Character Areas: Historic and cultural characteristics

Area	Characteristics
Severn and Avon Vales	There is extensive evidence of prehistoric activity in the Severn and Avon Vales. There is good evidence for the continuity of settlement from the Bronze Age through to the Anglo-Saxon period and beyond, both on the gravels and beneath modern villages. In the southern part of the area, Roman influence was particularly strong. Gloucester was a major Roman centre. Today the area is characterised by many ancient market towns and large villages along the rivers.
Dunsmore and Feldon	Historic deforestation and enclosure of most of the open heathland with a typical enclosure pattern of long, straight hedges of hawthorn and blackthorn with frequent hedgerow trees. Coventry was always the dominating settlement of the area.
Arden	North-eastern industrial area based around former Warwickshire coalfield, with distinctive colliery settlements. The 19th and 20th century expansion of Coventry has had a strong influence on the surrounding landscape. Birmingham developed in a fairly compact way from its original medieval centre and small-scale medieval industries.
Mid Severn Sandstone Plateau	Stour and Severn valleys with frequent villages and historic bridging towns. Coalfield remnant landscape along the Severn Valley. The Staffordshire and Worcestershire canal is an important man-made feature.
Shropshire Hills	There are numerous settlement sites, hillforts, barrows and field systems dating from the prehistoric period.
Shropshire, Cheshire and Staffordshire Plain	Clearance of the woodlands only began in the late Bronze Age and even then settlement was concentrated on the drier lands of the Pennine Fringe and the Sandstone Ridges. The influence of the Romans can be seen through the notable roads built to cross the Plain particularly Watling Street which linked London to mid-Wales. Chester was the most significant Roman settlement. Many of the market towns, and their churches, can be traced back to Norman times.
Potteries and Churnet Valley	Bronze Age barrows are to be seen on prominent hilltop sites. The other principal prehistoric evidence in the present landscape is the Iron Age hillfort within Alton Towers. Sprawling industrial towns of the Potteries form a major conurbation.
White Peak	Long-disused workings for limestone and ores, particularly lead rakes, provide features rich in ecological, historical and cultural interest. Features of special archaeological interest together with strong cultural heritage dating from the earliest prehistoric past.
Nottinghamshire, Derbyshire and Yorkshire Coalfield	Strong cultural identity arising from history of coal mining and other heavy industry. The landscape is rich in industrial archaeology, including features such as bell-pits, mills and goits, tips, old railways and tramways, canals and bridges. Many of the woodlands also have strong industrial links.

Area	Characteristics
Trent and Belvoir Vales	The Romans established centres at Newark and Lincoln and built several roads crossing the area. These include the Great North Road which goes on to York and the Fosse Way which links Bath to Lincoln. Newark and Lincoln now represent large market towns with historic centres and substantial churches visible from afar, as do Grantham and Southwell.
Leicestershire and Nottinghamshire Wolds	Ironstone and Lincolnshire Limestone churches. Isolated farms but few cottages and houses: an empty landscape. Fox coverts and strong associations with hunting. Deserted settlements, ridge and furrow and shrunken settlements.
High Leicestershire	Ironstone and limestone churches and vernacular buildings but also abundant brick. Frequent and very prominent ridge and furrow and many deserted settlements.
Northamptonshire and Leicestershire Vales	The river valleys were a focus of settlement from at least Neolithic times and had become extensively settled by the Bronze Age. Air photographs of the gravel terraces of the Soar, Welland and particularly the Nene have shown areas thick with Bronze Age occupation and ritual sites. Dense occupation of the valleys continued in the Roman period, with a major Roman centre at Leicester. Large towns of Leicester and Northampton continued to develop and grow over time and now dominate much of the landscape. Other historical and cultural features include prominent parks and country houses and frequent imposing, spired churches.
Bryniau a Dyffrynnoedd Trefaldwyn/Montgomeryshire Hills and Vales	Principal historic features include sites and settlements from the Roman and Medieval periods, in addition to a number of historic parklands such as Llangedwyn and Bodfach. Meifod was an important Early Christian church foundation.
Y Berwyn/Berwyn	Key elements of the historic landscape include prehistoric ritual and funerary monuments such as the cairns and round barrows, which are extensively concentrated in the most elevated areas. There is also significant evidence of prehistoric and Medieval occupation in the Berwyn moorlands and in the Tanat valley.
Uwchdiroedd Cymru/Cambrian Mountains	The mountains contain a significant scattering of prehistoric monuments, including round barrows, cairns, stone circles and standing stones, Iron Age hillforts and settlements. The fort at Cae Gaer indicates a Roman presence, while the Cistercian abbey of Strata Florida was established on the west side of the mountains in the late 12th century.

There is an inter-relationship and overlap between the historic environment (and historic landscapes) and the Landscape and Visual Amenity SEA topic. For example registered parks and gardens are considered to be a designated heritage asset,

however, they equally present a baseline important to identifying effects on landscape and visual amenity. Similarly, characteristics important to designated landscapes (see Section 4.9.1) are a result of heritage assets and the way land has been managed over time.

English Heritage has been collecting data on buildings at risk for more than a decade. The National Heritage at Risk Register systematically checks the condition of problem buildings, initially focused on buildings at risk, but now adapted to serve other types of heritage asset. The number of grade I and II* buildings at risk fell by 17% between 1999 and 2007. However, there has been a significant slow-down in the annual rate of decrease since then[101]. For other types of heritage assets, the long-term trends are not yet firmly established but a very small reduction in the number of sites on the Register between 2009 and 2010 has been reported. The source of risk to Scheduled Monuments resulting from water abstraction or dewatering is 1.71% nationally. However, other assets such as those composed of organic material and preserved in waterlogged or anaerobic conditions are proportionately more at risk (e.g. palaeo-environmental deposits).

The Register of Landscapes of Historic Importance in Wales recognises the role human activity has played in shaping the Welsh landscape. It lists 58 landscapes of special historic interest; the following landscapes are found within the Severn Trent region:

- Maelor
- Vale of Llangollen and Eglwyseg
- Tanat Valley
- Vale of Montgomery
- Caersws Basin
- Clywedog
- Upland Ceredigion
- Elan Valley
- The Lower Wye Valley

Not all heritage assets are designated. Some buildings are locally listed and information on non-scheduled archaeological remains is held on local Historic Environment Records. This information is not readily assimilated for use in a strategic assessment covering several regions, and is therefore more suited to project level assessments such as Environmental Impact Assessments (EIA).

101 English Heritage (2010) Heritage at Risk

In relation to unknown assets, approximate locations of areas important for palaeo-environmental deposits were identified according to a spreadsheet supplied by English Heritage[102]. This identified that there are a number sites within the Severn Trent Water supply area which are either known or suspected to be of high importance for water level dependent archaeology. For example a number of sites have been identified in north Shropshire. The dataset supplied by English Heritage (or, if available, an updated version), will be used to support assessment of schemes.

Future Baseline

The spatial planning system and World Heritage Management Plans, produced for each nominated site, safeguard the future of World Heritage sites[103].

The NPPF requires the conservation of heritage assets in a manner appropriate to their significance, so that they can contribute to quality of life for this and future generations. The NPPF states that when considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the conservation of the asset: the more important the asset, the greater the weight should be. Substantial harm to, or loss of, a grade II listed building, park or garden should only be acceptable in exceptional circumstances. Substantial harm to, or loss of ,designated heritage assets of the highest significance, notably scheduled monuments, protected wreck sites, battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional. Where a proposed development will lead to substantial harm to or total loss of significance of a designated heritage asset, it is stated that consent will be refused unless it can be demonstrated that the substantial harm or loss is necessary to achieve substantial public benefits that outweigh that harm or loss. Otherwise the following must apply:

- the nature of the heritage asset prevents all reasonable uses of the site
- no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation
- conservation by grant-funding or some form of charitable or public ownership is demonstrably not possible
- the harm or loss is outweighed by the benefit of bringing the site back into use.

Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the

102 English Heritage (2011) National Monument Record Wetland Heritage List Data 111006
103 Accessed at http://www.english-heritage.org.uk/content/publications/docs/englishheritagewhsplanningcircularguidance.pdf

public benefits of the proposal, including securing its optimum viable use.

Recent and ongoing national economic difficulties may have a negative effect on removing heritage assets from the heritage at risk register. Climate change could have variable impacts on heritage assets in the future. Some types of assets and landscapes have already experienced and survived significant climatic changes in the past and may demonstrate considerable resilience in the face of future climate change. However, many more historic assets are potentially at risk from the direct impacts of future climate change[104].

Key Issues

The key sustainability issue arising from the baseline assessment for archaeology and cultural heritage is:

- The need to protect and enhance heritage assets, particularly those which are dependent upon or sensitive to the water environment.

LANDSCAPE AND VISUAL AMENITY

Baseline

The Severn Trent Water supply area has a rich diversity of urban and rural landscapes ranging from the mountains and uplands of the Peak District to the agricultural plains of Shropshire and the Vale of Evesham. The landscape character network[105] defines landscape character as a 'distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse'. Some landscapes are special because they have a particular amenity value, such as those designated as National Parks or Areas of Outstanding Natural Beauty (AONB). Others may have an intrinsic value as good examples or be the only remaining examples of a particular landscape type. Some landscapes are more sensitive to development whereas others have a greater capacity to accommodate development. Assessments of landscape character and landscape sensitivity enable decisions to be made about the most suitable location of development to minimise impacts on landscapes.

Nationally Designated Sites

AONB are defined as 'precious landscapes whose distinctive character and natural beauty are so outstanding that it is in the nation's interest to safeguard them'[106].

104 English Heritage (2010) Climate Change and the Historic Environment
105 www.landscapecharacter.org.uk, accessed 14th July 2006
106 National Association for AONBs (2012) Accessed at www.aonb.org.uk

They are designated under the National Parks and Access to the Countryside Act, 1949, strengthened by the Countryside and Rights of Way Act, 2000. The primary purpose of the AONB is 'to conserve and enhance the natural beauty of the landscape.' There are five AONBs within, or partially within, the Severn Trent Water supply area. These are described in **Table C.14** and shown on **Figure C.9**. The Peak District National Park covers a small area of the Severn Trent Water supply area in the Stafford and East Shropshire WRZ whilst the Shelton WRZ and Llandinam and Llanwrin WRZ boarder Snowdonia National Park (see **Figure C.9**).

Table C.14 National Parks and AONBs within the Severn Trent Water Supply Area

Name of Site	Key Characteristics
Cannock Chase AONB	Elevated plateau of Triassic sandstones and pebble beds. The largest surviving area of lowland heathland in the Midlands. Surrounded by large villages, collieries and historic parkland. Much of the heathland area presents an unspoilt almost semi-wilderness character, standing in contrast to the surrounding developments.
Cotswolds AONB	Jurassic limestone creating distinctive character. Nationally important for limestone grassland and ancient beechwood. Recreation resource – includes the Cotwolds National Trail.
Malvern Hills AONB	Very hard igneous and metamorphic rocks form the high ground of the Malvern Hills ridge. Silurian rocks, formed in a marine environment, underpin the ridge and vale scenery. Extensive areas of acid grassland and heath on the hill tops. Mixed broadleaved woodland often of ancient origin on the lower hills and valleys in the north and west. Recreation resource - established trails and routes, such as the Elgar route, the Cider Trail. Opportunities to engage in a wide range of recreational activities.
Shropshire Hills AONB	Greatest geological variety of any comparable sized area in the UK. Landscape character is one of variety and of transition – between the lowland plains of the English Midlands and the uplands of Wales, and between north and south of Britain. Off the beaten track and tranquil, with walking and activities of all levels, and for relaxation and inspiration.
Wye Valley AONB	Silurian limestones, plateaux of Old Red Sandstone. Dramatic limestone gorge and some of the most outstanding native woodlands to be found in Britain. Recreation resource - footpaths providing for access to beauty spots and more demanding walks. Water sports, rock climbing, abseiling and caving.
Peak District National Park	Limestone plateau (White Peak) and high gritstone moorland (Dark Peak). The White Peak limestone plateaux is dissected by deeply cut dales and gorges, with flower-rich grasslands of international importance. The White Peak is home to most of the Peak District's 38,000 residents, living in a thriving network of small settlements and farmed land. The South West Peak features mixed moorland and grassland landscapes with rock outcrops. Recreation resource - diverse range of activities such as walking, cycling, fell running, horse riding, climbing, caving, fishing or air sports. The Peak District's unique position at the heart of the country means that around 16 million people live within one hour's travel time of the national park.

Landscape Character

The visual landscape characteristics of the relevant NCA and Welsh regional landscape character areas (shown again in **Figure C.9** for reference) are included in **Table C.15** below.

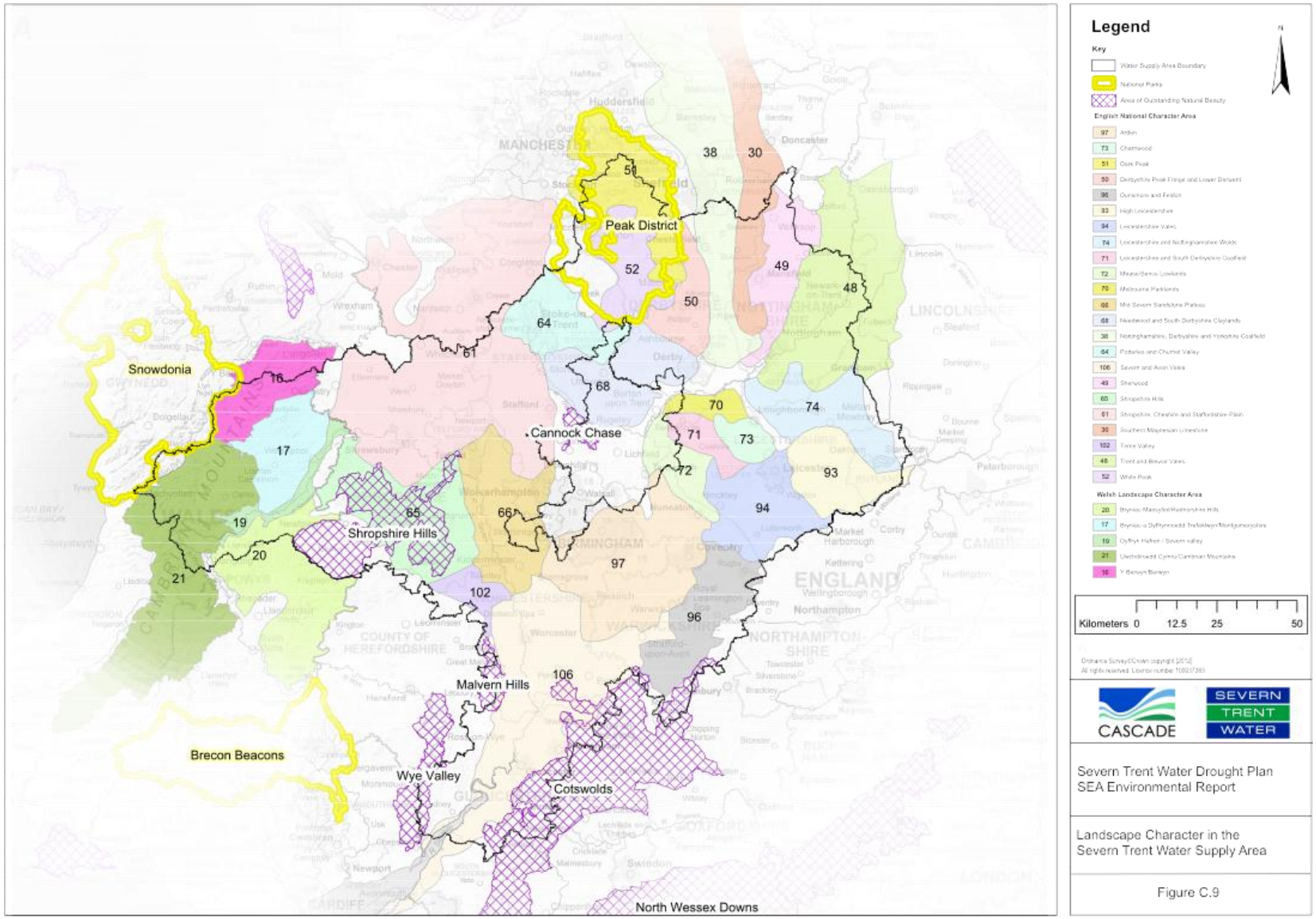
Table C.15 Landscape Character Areas: Landscape characteristics

Area	Landscape Characteristics
Severn and Avon Vales	Diverse range of flat and gently undulating landscapes, united by broad river valley character. Riverside landscapes with little woodland, often very open. Many ancient market towns and large villages along the rivers. Prominent views of hills – such as the Cotswolds, Bredon and the Malverns – at the edges of the character area.
Dunsmore and Feldon	Farmland with large geometric fields divided by straight hedges with many hedgerow trees. Generally well-wooded appearance but also extensive open arable farmland. Heathland character still evident in woodland clearings and roadsides. Plateau landscape of open, flat, rather empty character, with long views. Large ancient woodlands of high nature-conservation value in the west. Strong urban influence in some areas.
Arden	Well-wooded farmland landscape with rolling landform. Ancient landscape pattern of small fields, winding lanes and dispersed, isolated hamlets. Numerous areas of former wood-pasture with large, old, oak trees, often associated with heathland remnants. Narrow, meandering river valleys with long river meadows. North-western area dominated by urban development and associated urban edge landscapes.
Mid Severn Sandstone Plateau	Rolling landform with open, arable cultivation dominating an often weak hedgerow pattern. Prominent urban fringes. Contrasting areas of smaller fields, and mixed field pattern with more distinctive hedgerows in west. Parklands and estate conifer and deciduous woodlands. Extensive mixed woodland together with scattered mining and forest edge housing forming distinctive Wyre Forest landscape. Stour and Severn valleys with frequent villages and historic bridging towns. Narrow, steep-sided wooded dingles found throughout the area. Steep, wooded gorges of the Severn Valley. Coalfield remnant landscape along the Severn Valley. The Staffordshire and Worcestershire canal - an important man-made feature. New town landscape of Telford.
Shropshire Hills	Dominant pattern of south-west to north-east ridges, scarps and intervening valleys. Steep, rounded 'whaleback' hills. Hill tops often crowned with open moorland, with woodland on steeper slopes. Hill slopes with patchworks of small pasture fields, giving way to arable lands in the dales. Distinctive and prominent landmarks, such as Long Mynd, Wenlock Edge, the Wrekin and Clee peaks. Scattered farms in dales and sheltering in valleys. Larger settlements confined to the Stretton Valley and the A49 corridor. Small fields and cottages of squatter settlements in some areas.
Shropshire, Cheshire and Staffordshire Plain	Extensive gently rolling plain, interrupted by sandstone ridges. A unified rural landscape, dominated by dairying, with strong field patterns, merging with more mixed and arable farming to the north and south-east. Mosses, meres and small field ponds are scattered throughout. Large farmsteads regularly spaced throughout, with dispersed hamlets, and few market towns. Buildings are predominantly red brick, with warm sandstone churches and, in the national parks occasional very distinctive black and white half-timbered buildings.

Area	Landscape Characteristics
Potteries and Churnet Valley	Strongly dissected hills and small plateaux, rising up to the Pennines and cut by major river valleys. Strong contrast between remote uplands, urban areas, sheltered wooded valleys and hillside pastures. Sprawling industrial towns of the Potteries forming a major conurbation. Extensive former industrial and extractive sites, many now reclaimed, intermixed with settlements and open land. Rural settlement pattern of sheltered villages on low ground with hamlets, scattered farmsteads and cottages elsewhere.
White Peak	Elevated limestone plateau dissected by steeply cut dales and gorges with rock outcrops. Broad leaved woodlands along dale sides. Clear, fast-flowing rivers and streams. Nucleated villages and small towns connected by crest and valley roads. Lack of a unifying style of architecture for buildings and settlements due to the availability of two dissimilar rock types, limestone and 'gritstone' used either singly or in combination in various parts of the area. Large-scale limestone quarries creating major scars in limited places in an otherwise attractive landscape. Features of special archaeological interest together with strong cultural heritage dating from the earliest prehistoric past.
Nottinghamshire, Derbyshire and Yorkshire Coalfield	Widespread evidence of industrial activity including mine buildings, former spoil tips, and iron and steel plants. Many areas affected by urban fringe pressures creating fragmented and downgraded landscapes. Small, fragmented remnants of pre-industrial landscape and semi-natural vegetation, including many areas of woodland, river valley habitats, subsidence flashes and other relict habitats. Widespread influence of transport routes, including canal, road (M1, M62) and rail, with ribbon developments emphasising the urban influence in the landscape. Rolling landforms with hills, escarpments and broad valleys. Local variation in landscape character reflecting variations in underlying geology. Strong cultural identity arising from history of coal mining and other heavy industry.
Trent and Belvoir Vales	Gently undulating landform, with shallow ridges dropping down gently to broad river valleys. Frequent nucleated villages with red brick houses, roofed with pantiles, and spired churches prominent in long views. Large market towns with historic centres and substantial churches visible from afar, notably Newark, Grantham, Southwell, Lincoln. Subtle variations within the area from the remote and pastoral landscape of the Vale of Belvoir, to the more undulating and wooded farmland north-east of Nottingham and the open arable lands to the north and east. Urban development closely confined to major centres, in particular the outskirts of Nottingham. Elsewhere the open, undeveloped and rural character strongly influenced locally by power stations, pylons and sand and gravel extraction on the Trent floodplain.

Area	Landscape Characteristics
Leicestershire and Nottinghamshire Wolds	Rolling, glacial till ridges with small narrow valleys. Exposed, open, rather bleak ridge tops, often in arable use. Sheltered valleys and lower slopes with pasture and frequent hedge cover. Scattered small villages of red brick and pantiles. Ironstone and Lincolnshire Limestone churches. Isolated farms but few cottages and houses: an empty landscape. Deserted settlements, ridge and furrow and shrunken settlements. Prominent and wooded northern and western scarps. Many, deeply rural, remote areas with long, straight enclosure roads, wide verges and narrow sunken lanes. Major inland reservoir at Rutland Water.
High Leicestershire	Broad rolling ridges and varied, often steep-sided valleys. Well-treed character from hedgerows, hedgerow trees, copses, spinneys and small woodlands, the last often sited on ridges. Mixed farming, but with arable mainly on the ridge tops and the wide valley bottoms. Sparse settlement of small villages with little modern development. Ironstone and limestone churches and vernacular buildings but also abundant brick. Frequent and very prominent ridge and furrow and many deserted settlements. Green lanes, quiet country and a remote, rural, often empty character.
Northamptonshire and Leicestershire Vales	Gentle clay ridges and valleys with little woodland and strong patterns of Tudor and parliamentary enclosure. Distinctive river valleys of Soar, Welland and Nene with flat floodplains and gravel terraces. Large towns of Leicester and Northampton dominate much of the landscape. Frequent small towns and large villages, often characterised by red brick buildings. Prominent parks and country houses. Frequent imposing, spired churches. Attractive stone buildings in older village centres and eastern towns and villages. Great diversity of landscape and settlement pattern with many sub units, e.g. Nene Valley and Welland Valley.
Bryniau a Dyffrynnoedd Trefaldwyn/Montgomeryshire Hills and Vales	A mix of hills and valleys with both lowland and upland features, generally quiet and rural. Topography is that of a distinctly undulating series of ridges and valleys, which are aligned broadly east to west. Ridges and scarp slopes create sinuous, curved skylines. A network of hedgerows with hedgerow trees defines the field boundaries, interspersed with blocks of deciduous woodland of irregular or organic form, in addition to plantation woodland. A number of the steep sided valleys are wooded, with the woodlands supporting diverse floral communities and wet mosses, for example, at Coed Cepi'r Graig. Principal historic features include sites and settlements from the Roman and Medieval periods, in addition to a number of historic parklands such as Llangedwyn and Bodfach. Settlement is confined to isolated farmsteads and compact nucleated valley villages associated primarily with historic river crossing points. A patchwork landscape of pastoral fields and woodland, with an intimate spatial character created by the distinctive combination of vegetation and the undulating ridge and valley land form.

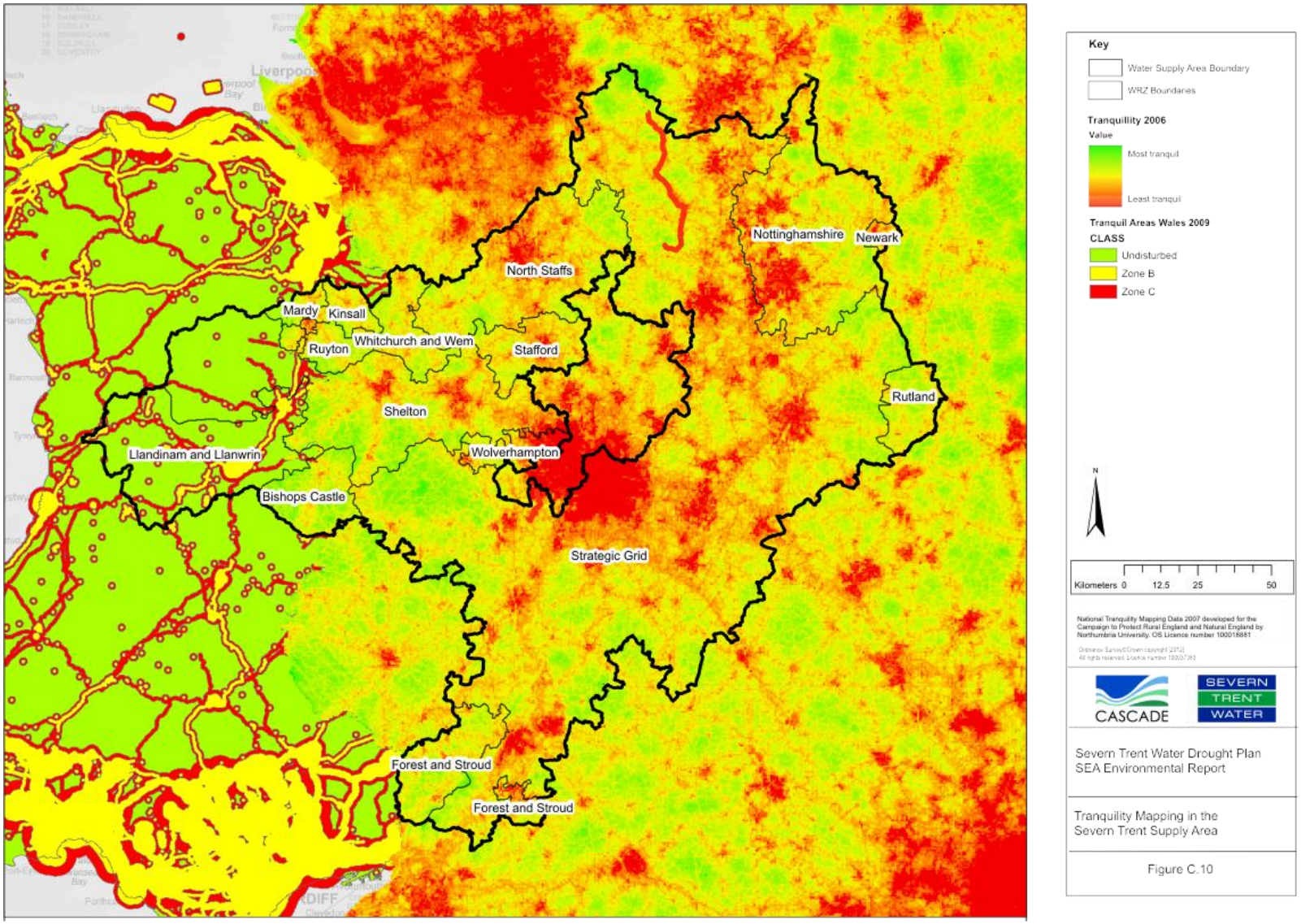
Area	Landscape Characteristics
Y Berwyn/Berwyn	An extensive open, unenclosed, rolling upland landscape with a series of deeply incised 'V' or 'U' shaped river valleys. Much of Berwyn has a remote and unsettled character, with the few focii of settlement found in compact, linear valley villages such as Llangynog, served by a network of winding B class and minor roads. The plantation surrounded Vyrnwy reservoir is a notable landscape feature, providing localised variation in what is predominantly an open and elevated moorland landscape. Key elements of the historic landscape include prehistoric ritual and funerary monuments such as the cairns and round barrows, which are extensively concentrated in the most elevated areas. There is also significant evidence of prehistoric and Medieval occupation in the Berwyn moorlands and in the Tanat valley.
Uwchdiroedd Cymru/Cambrian Mountains	Vast upland, rolling, windswept plateau of moorland hills and incised valleys at the heart of Wales. Glaciation gouged deeply dissected U-shaped valleys into the plateau, as well as corries (cymoedd), lakes and moraines. Emerald green valleys on the edges of the moorland, with their distinctive pattern of hedgerow enclosures, contain lush pastures for stock grazing, and woodland. The major reservoirs and dams of Nant-y-Moch, Llyn Clywedog, Craig Goch, Penygarreg, Garreg-ddu, Claerwen and Llyn Brianne are features of the valleys, contributing to the landscape's man-made features. The mountains contain a significant scattering of prehistoric monuments, including round barrows, cairns, stone circles and standing stones, Iron Age hillforts and settlements. Settlement is largely absent, being confined to the lower hillsides and valleys, however, a large number of deserted settlements indicate that settlement was once more widespread than today. Screes and cliffs, gritstone outcrops, stony summits, bracken scrub and wind blown oaks provide texture in the landscape. Panoramic views from high summits over the moorlands and adjacent lowlands are a feature of the hills. The mountains engender a sense of remoteness because of their dark night-time skies, low population density, relative inaccessibility, the impression of naturalness they impart and the relative lack of visible, built influences.


Peak District
Snowdonia
Cannock Chase
Shropshire Hills
Malvern Hills
Brecon Beacons
Wye Valley
Cotswolds
North Wessex Downs
Legend
Key
Water Supply Area Boundary
National Parks
Area of Outstanding Natural Beauty
English National Character Area
Welsh Landscape Character Area
Kilometers 0 12.5 25 50
CASCADE
SEVERN TRENT WATER
Severn Trent Water Drought Plan
SEA Environmental Report
Landscape Character in the
Severn Trent Water Supply Area
Figure C.9

Tranquillity is also considered to be a highly valued element with respect to the experience and enjoyment of the countryside. The Campaign for the Protection of Rural England (CPRE) has undertaken studies on tranquillity levels in England using a rigorous set of indicators predominantly falling into two categories; seeing (e.g. naturalness, openness and visibility at night) and hearing indicators (e.g. level and attenuation of constant noise/occasional noise and feature specific noise - lapping water, running water, the sea, high altitude aircraft) both with numerous positive and negative attributes. The studies and data sets were modelled using Geographical Information Systems (GIS) to produce a tranquillity map for England[107]. The tranquillity map presents a national tranquillity score or a relative scale for each 500m x 500m grid square in England at a snapshot time in 2006. **Figure C.10** shows tranquillity mapping for the Severn Trent region.

The DP has the potential to influence the landscape and visual amenity through the potential effects of temporary construction activity and operation of drought management options.

107 CPRE (2008) Tranquillity Mapping - Short report on the methodology


Liverpool
North Staffs
Nottinghamshire
Newark
Mardy
Kinsall
Ruyton
Whitchurch and Wem
Stafford
Rutland
Shelton
Llandinam and Llanwrin
Wolverhampton
Bishops Castle
Strategic Grid
Forest and Stroud
Forest and Stroud
Key
Water Supply Area Boundary
WRZ Boundaries
Tranquillity 2006
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Most tranquil
Least tranquil
Tranquil Areas Wales 2009
CLASS
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Zone B
Zone C
N
Kilometers 0 12.5 25 50
National Tranquility Mapping Data 2007 developed for the Campaign to Protect Rural England and Natural England by Northumbria University. OS Licence number 100018881
CASCADE
SEVERN TRENT WATER
Severn Trent Water Drought Plan
SEA Environmental Report
Tranquility Mapping in the
Severn Trent Supply Area
Figure C.10

Future Baseline

One of the core planning principles of the NPPF is to take account of the different roles and character of areas, promoting the vitality of our main urban areas, protecting the Green Belts around them, recognising the intrinsic character and beauty of the countryside and supporting thriving rural communities within it. The NPPF states that great weight should be given to conserving landscape and scenic beauty in National Parks and AONBs, which have the highest status of protection in relation to landscape and scenic beauty. The NPPF identifies that planning permission should be refused for major developments in these designated areas except in exceptional circumstances and where it can be demonstrated they are in the public interest.

Key Issues

The key sustainability issue arising from the baseline assessment for landscape and visual amenity is:

- The need to protect and improve the natural beauty of the region's AONBs and Peak District National Park and other designated landscapes, and to conserve and enhance the distinctive character of the landscape (rural and urban) outside of designated landscapes.

SUMMARY OF KEY ISSUES

A summary of the key issues identified by the policies, plans and programmes review (Section 2) and the baseline data review (Section 4.1 to 4.9) is presented in **Table C.14.** These key issues have been used to help develop the SEA objectives in Section 3.

Table C.14 Summary of the key sustainability issues identified for the SEA

Topics	The key sustainability issues arising from the baseline assessment
Biodiversity, flora and fauna	• The need to protect or enhance the region's biodiversity, particularly protected sites designated for nature conservation. • The need to avoid activities likely to cause irreversible damage to natural heritage. • The need to take opportunities to improve connectivity between fragmented habitats. • The need to engage more people in biodiversity issues so that they personally value biodiversity and know what they can do to help.

Topics	The key sustainability issues arising from the baseline assessment
Population and human health	• The need to ensure continued improvements in levels of health across the region, particularly in urban areas and deprived areas • The need to ensure essential water supplies are safeguarded to all communities to protect public health and economic activity. • The need to ensure a balance between different aspects of the built and natural environment that will help to provide opportunities local residents and tourists, including opportunities for access to recreational resources and the natural and historic environment • The need to promote the health benefits of drinking water, encourage efficient use of water and ensure people understand the value of water.
Material assets and resource use	• The need to minimise the consumption of resources, including water and energy. • The need to reduce the total amount of waste produced in the region, from all sources, and to reduce the proportion of this waste sent to landfill.
Water	• The need to maintain and further improve the region's river, lake, reservoir and estuarine waters in terms of their ecology and uses. • The need to maintain and improve the quantity and quality of surface water and groundwater resources in the region. • The need to sustain and improve the resilience, flexibility and sustainability of water resources in the region. • The need to ensure sustainable abstraction, balancing the needs of consumers for a reliable supply of water with the protection of the environment. • The need to reduce and manage flood risk. • The need to ensure resilience of infrastructure against flood risk • The need to ensure that people understand the value of water..
Soil, geology and land use	• The need to protect geological features of importance and maintain and enhance soil function and health. • The need to make use of previously developed land (brownfield land) and to reduce the prevalence of derelict land in the region. • The need to manage the land more holistically at the catchment level, benefitting landowners, other stakeholders, the environment and sustainability of natural resources. • The need to protect, maintain and enhance peat land and organic soils within the region.
Air and climate	• The need to reduce air pollutant and greenhouse gas emissions arising from industrial processes and transport and limit air emissions to comply with air quality standards. • The need to mitigate against climate change through the reduction in greenhouse gas emissions in order to contribute to risk reduction over the long term. • The need to adapt to the impacts of climate change for example through management of flood risk, sustainable water resource management, specific aspects of natural ecosystems (e.g. connectivity) as well as accommodating potential opportunities of climate change.
Archaeology and cultural heritage	• The need to protect and enhance heritage assets, particularly those which are dependent upon or sensitive to the water environment.
Landscape and visual amenity	• The need to protect and improve the natural beauty of the region's AONBs, Peak District National Park and other designated landscapes, and to conserve and enhance the distinctive character of the landscape (rural and urban) outside of designated landscapes.
Inter-relationships	• The need to consider the inter-relationships between topics.

APPENDIX D

QUALITY ASSURANCE CHECKLIST

The Practical Guide suggests a Quality Assurance checklist to help ensure that the requirements of the SEA Directive are met. The checklist is reproduced in **Table D1**, indicating where this Environmental Report and meets the requirements.

Table D1 Quality Assurance Checklist

Checklist item	Comments
Objectives and context	
The plans or programme's purpose and objectives are made clear.	The purpose of the DP is set out in Section 2 of this Environmental Report.
Environmental issues and constraints, including international and EC environmental protection objectives, are considered in developing objectives and targets.	Objectives of other relevant plans and programmes are set out in Section 2.2 and Appendix B.
SEA objectives, where used, are clearly set out and linked to indicators and targets where appropriate.	SEA objectives are set out in Section 3 of this Environmental Report.
Links with other related plans, programmes and policies are identified and explained.	Links are identified in Section 2.2 and Appendix B of this Environmental Report.
Conflicts that exist between SEA objectives, between SEA and plan objectives and between SEA objectives and other plan objectives are identified and described	Interactions between objectives are presented in Section 3.4.
Scoping	
Consultation Bodies are consulted in appropriate ways and at appropriate times on the content and scope of the Environmental Report.	This Environmental Report is a part of the consultation process required to meet the requirements of the SEA Directive and will be circulated to consultees. Further consultation has also been undertaken on the Scoping Report and DP. The consultation process is described in Section 1.8.
The assessment focuses on significant issues.	The scope of the assessment reflects the geographic extent of Severn Trent Water's Water supply area and areas beyond this where the DP is considered to have a potential effect and provides a comprehensive approach to assessment (reflecting the large number of interactions dependent on the continued supply of water) which will enable the subsequent assessment to determine which impacts will be considered significant.
Technical, procedural and other difficulties encountered are discussed; assumptions and uncertainties are made explicit.	Difficulties and assumptions with respect to establishing the baseline are set out in Appendix C of this Environmental Report.
Reasons are given for eliminating issues from further consideration.	The SEA objectives provide a comprehensive basis for assessment and at this stage, no issues have been eliminated.
Alternatives	
Realistic alternatives are considered for key issues, and the reasons for choosing them are documented.	The DP considers a range of options/alternatives (described further in Section 1.4 of this report). SEA plays an important role in options appraisal process; options which are found by the SEA to have unacceptable potential impacts will be rejected from the options pool.
Alternatives include 'do minimum' and/or 'business as usual' scenarios wherever relevant.	Assessment of alternatives is presented in Section 4 of this Environmental Report. However, a 'business as usual' scenario is not considered appropriate with respect to the DP.
The environmental effects (both adverse and beneficial) of each alternative are identified and compared.	Assessment of environmental effects (both adverse and beneficial) of each alternative have been undertaken and are presented in Section 4 of this Environmental Report.
Inconsistencies between the alternatives and other relevant plans, programmes or policies are identified and explained.	Inconsistencies between the alternatives and other relevant plans, programmes or policies have been identified and are explained in Section 5 of this

Checklist item	Comments
	Environmental Report.
Reasons are given for selection or elimination of alternatives.	The DP and Section 1.4 of this Environmental Report document the reasons for selection or elimination of alternatives.
Baseline information	
Relevant aspects of the current state of the environment and their likely evolution without the plan or programme are described.	The current state of the environment and predicted future baseline is set out in Section 2 and Appendix C of this Environmental Report for each SEA topic.
Environmental characteristics of areas likely to be significantly affected are described, including areas wider than the physical boundary of the plan area where it is likely to be affected by the plan.	The environmental characteristics of the Severn Trent Water's water supply area, and bordering regions where appropriate, are described in Section 2 and Appendix C of this Environmental Report.
Difficulties such as deficiencies in information or methods are explained.	Difficulties and limitations are set out in Section 4.4.1 of the Scoping Report as well as Appendix C of this Environmental Report.
Prediction and evaluation of likely significant environmental effects	
Effects identified include the types listed in the Directive (biodiversity, population, human health, fauna, flora, soil, water, air, climate factors, material assets, cultural heritage and landscape) as relevant; other likely environmental effects are also covered, as appropriate.	Potential effects are set out in Section 4 of this Environmental Report.
Both positive and negative effects are considered, and the duration of effects (short, medium or long-term) is addressed.	The nature and duration of potential effects are set out in Section 4 of this Environmental Report, using an appraisal framework set out in Section 3.
Likely secondary, cumulative and synergistic effects are identified where practicable.	These effects are identified in Section 5 of this Environmental Report.
Inter-relationships between effects are considered where practicable.	These are considered in the Environmental Report alongside cumulative effects.
The prediction and evaluation of effects makes use of relevant accepted standards, regulations, and thresholds.	Relevant standards have been used where appropriate in undertaking the assessment.
Methods used to evaluate the effects are described.	Methods used to evaluate the effects are described in Section 3 of this Environmental Report.
Mitigation measures	
Measures envisaged to prevent, reduce and offset any significant adverse effects of implementing the plan or programme are indicated.	Mitigation measures for potential negative effects are outlined in Section 6 of this Environmental Report.
Issues to be taken into account in project consents are identified.	Effects, mitigation and monitoring identified through the SEA will inform further more detailed scheme level assessments such as EIA if necessary.
The Environmental Report	
Is clear and concise in its layout and presentation.	The Environmental Report is clear and concise.
Uses simple, clear language and avoids or explains technical terms.	The Environmental Report uses simple, clear language, and explains technical terms, as appropriate.
Uses maps and other illustrations where appropriate.	The Environmental Report uses maps and illustrations where appropriate.
Explains the methodology used.	SEA methodology is described in Section 3 of this Environmental Report.
Explains who was consulted and what methods of consultation were used.	The consultation strategy, including organisations and dates of consultation have been included in Section 1.8 of this Environmental Report.
Identifies sources of information, including expert judgement and matters of opinion.	Sources of information have been detailed in footnotes throughout this Environmental Report .
Contains a non-technical summary covering the overall approach to the SEA, the objectives of the plan, the main options considered, and any changes to the plan resulting from the SEA.	The Environmental Report includes a Non-Technical Summary.
Consultation	
The SEA is consulted on as an integral part of the plan-making process.	This Environmental Report is a part of the consultation process required to meet the requirements of the SEA Directive and will be

Checklist item	Comments
	circulated to consultees. Further consultation will be undertaken on the DP. Previous consultation has also been undertaken on the Scoping Report. The consultation process is described in Section 1.8 of this Environmental Report.
Consultation Bodies and the public likely to be affected by, or having an interest in, the plan or programme are consulted in ways and at times which give them an early and effective opportunity within appropriate time frames to express their opinions on the draft plan and Environmental Report.	The statutory consultation bodies, as well as the public, will be invited to express their views on the Environmental Report and will have the opportunity to use it as a reference point in expressing their views on Severn Trent Water's DP. The consultation process is described in Section 1.8 of this Environmental Report.
Decision-making and information on the decision	
The environmental report and the opinions of those consulted are taken into account in finalising and adopting the plan or programme.	Representations made on the DP will be addressed in preparing the Final DP.
An explanation is given of how they have been taken into account.	A Statement of Response to the representations will be produced and made publicly available.
Reasons are given for choosing the plan or programme as adopted, in the light of other reasonable alternatives considered.	On approval of the final DP by the regulators, the company will prepare an SEA Statement setting out how the SEA and any views expressed by the consultation bodies or the public have influenced the DP.
Monitoring measures	
Measures proposed for monitoring are clear, practicable and linked to the indicators and objectives used in the SEA.	The Environmental Report includes a section addressing proposals for monitoring in Section 6.
Monitoring is used, where appropriate, during implementation of the plan or programme to make good deficiencies in baseline information in the SEA.	Suggestions for monitoring have been made in Section 6 of this Environmental Report, with monitoring taking place following implementation of drought options, further to consultation with regulatory authorities including the Environment Agency, Natural England, Natural Resources Wales and English Heritage.
Monitoring enables unforeseen adverse effects to be identified at an early stage. (These effects may include predictions which prove to be incorrect.)	Suggestions for monitoring have been made in Section 6 of this Environmental Report, with monitoring taking place following implementation of drought options, further to consultation with regulatory authorities including the Environment Agency, Natural England, Natural Resources Wales and English Heritage.
Proposals are made for action in response to significant adverse effects.	Mitigation measures for adverse effects have been addressed in Section 6 of this Environmental Report.

APPENDIX E

STRATEGIC ENVIRONMENTAL ASSESSMENT OF EACH DROUGHT PLAN OPTION

DP Scheme: Introduction of a drought order to prohibit non-essential water uses (as defined in the Drought Direction 2011)		Application for a drought order to prohibit certain non-essential water uses in line with those uses defined in the Drought Direction 2011. This would only be applied for if reservoir stocks fall below an applicable "Drought Control Line"		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Biodiversity, flora and fauna	**To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity.**	The Drought Order will have some minor adverse impact on biodiversity, flora or fauna due to the ban on filling of ponds, with the risk of desiccation or increased nutrient/pollutant concentrations. The Drought Order will reduce consumer demand for water and will result in reduced requirement for abstraction at sources (and therefore, potential for positive impacts on flow sensitive habitats/species). Overall, the assessment is for a mixed effect significance.	Large scale/Certain/Temporary	**Mixed**
	To strengthen the connections between people and nature and realise the value of biodiversity.	The Drought Order will enable the public to make connections between water use and the effects on the environment, helping to encourage customers to use water wisely to benefit the environment.	Large scale/Certain/Temporary	**Minor Beneficial**
Population and Human Health	**To improve human health and well-being of the area, improve access to recreation and the environment, and reduce inequalities.**	The Drought Order will result in water savings which will contribute towards improving the security of supply of water in the Severn Trent Water region so that essential supplies for public health can be maintained. However, elderly and frail customers may have difficulties with using alternative means of watering plants or washing vehicles. There may be reduced recreational opportunities due to the ban on watering sports grounds and filling of private swimming pools. There will adverse effects on the local economy, such as on window cleaners, jet washing and automatic vehicle washing companies, and sellers of plants and pond accessories. Overall effects are therefore mixed.	Large scale/Certain/Temporary	**Mixed**
Material assets and resource use	**To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill**	The reduction in water use will reduce the energy needed in treating and pumping water. The ban will also increase awareness of the public of water resource consumption and to reduce wastage. This option will reduce the amount of water used in the Severn Trent Region.	Large scale/Certain/Temporary	**Minor Beneficial**
Water	**To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.**	The Drought Order will have a beneficial impact resulting in a reduced requirement for abstraction at sources in drought conditions, helping to protect water quality and flow regimes.	Large scale/Certain/Temporary	**Minor Beneficial**
	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability		Large scale/Certain/Temporary	**Minor Beneficial**
	To ensure reliable, resilient and sustainable water resources for people, economy and the environment. **To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources.**	The Drought Order will reduce water use and contribute to the maintenance of essential water supplies. However, customers and economic activity will be adversely impacted due to restrictions on non-essential water use, with reduction in confidence in reliability of water resources. The Drought Order will help to promote efficient use of water and how this helps to protect the environment and safeguard water supplies. Overall effects are assessed as moderate adverse.	Large scale/Certain/Temporary	**Moderate Adverse**
	To reduce and manage fluvial and surface water flood risk.	This option will have no effects on flood risk.	n/a	n/a
Soil, geology and land use	**To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to land use management (rural and urban).**	Adverse impacts of the Drought Order on soil, geology and land use are anticipated to be no greater than negligible. The reduction in consumption will reduce abstraction with minor beneficial impacts on river sedimentation processes.	Small scale/Certain/Temporary	**Minor Beneficial**

DP Scheme: Introduction of a drought order to prohibit non-essential water uses (as defined in the Drought Direction 2011)		Application for a drought order to prohibit certain non-essential water uses in line with those uses defined in the Drought Direction 2011. This would only be applied for if reservoir stocks fall below an applicable "Drought Control Line"		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Air and Climate	**To reduce air pollutant and greenhouse gas emissions.**	Reduced water consumption will have a negligible impact on energy use for water supply and treatment. The Drought Order will reduce dust suppression activity and reduce watering of soils, leading to localised increases in air pollutants.	Large scale/Certain/Temporary	**Minor Adverse**
	To adapt and improve resilience to the threats of climate change.	The Drought Order will help to reduce demand but this will be a temporary benefit only. It will have a negligible benefit on future demand for water to provide resilience against climate change impacts.	Large scale/Certain/Temporary	**Negligible**
Archaeology and Cultural Heritage	**To protect and enhance heritage assets, their setting and the historic environment.**	The Drought Order may have an adverse impact on certain archaeological or cultural heritage assets that rely on ponded structures, for example if moats that provide settings to heritage assets cannot be filled by hand and foundations dry out. Wooden structures normally submerged will begin to degrade if exposed to air. Similarly any heritage or archaeology assets, such as water wheels or hydraulic systems that are supported by pond structures could be adversely affected.	Large scale/Uncertain/Temporary (but potentially Permanent)	**Minor Adverse**
Landscape and Visual Amenity	**To protect and enhance the quality of, and improve access to, designated and undesignated landscapes, Green Belt and the built environment.**	The Drought Order will reduce watering of some landscaping areas, gardens and parks as well as the filling of ponds. This is likely to lead to some minor adverse impacts on visual amenity particularly in urban landscapes. The impacts are temporary only.	Large scale/Certain/Temporary	**Minor Adverse**

DP Scheme: Drought publicity campaign		Media appeals for customer restraint		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Biodiversity, flora and fauna	**To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity.**	Drought publicity will be communicated through radio and newspaper advertisements. Such methods of publicity are considered to have no adverse impact on biodiversity, flora or fauna, but will act to help reduce demand for water and the requirement for abstraction at sources (and therefore, potential for minor positive impacts on flow sensitive habitats/species).	Large scale /Certain /Temporary	**Minor Beneficial**
	To strengthen the connections between people and nature and realise the value of biodiversity.	Publicity will enable the public to make connections between water use and the effects on the environment, helping to encourage water efficiency to benefit the environment.	Large scale /Certain /Temporary	**Minor Beneficial**
Population and Human Health	**To improve human health and well-being of the area, improve access to recreation and the environment, and reduce inequalities.**	Drought publicity will result in water savings which will contribute towards improving the security of supply of water in Severn Trent Water region so that essential supplies for public health can be maintained. No impacts on recreation are anticipated.	Large scale /Certain /Temporary	**Minor Beneficial**
Material assets and resource use	**To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill**	Drought publicity will be communicated through radio and newspaper advertisements and as such will not involve any increased material resource use. Drought publicity will result in increased awareness of the public of water resource consumption and waste (water). This option will reduce the amount of water used in Severn Trent Water region.	Large scale /Certain /Temporary	**Minor Beneficial**
Water	**To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.**	Drought publicity will have a beneficial impact on water, acknowledging that reduced consumer demand for water will result in reduced requirement for abstraction at sources in drought conditions, helping to protect water quality and flow regimes.	Large scale /Certain /Temporary	**Minor Beneficial**
	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability		Large scale /Certain /Temporary	**Minor Beneficial**
	To ensure reliable, resilient and sustainable water resources for people, economy and the environment. **To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources.**	Drought publicity will result in water savings which will contribute towards improving the security of supply of water in the Severn Trent Water supply region. There is the potential for the drought publicity to raise awareness of the importance and value of water environment for health and well-being.	Large scale /Certain /Temporary	**Minor Beneficial**
	To reduce and manage fluvial and surface water flood risk.	This option will have no effects on flood risk.	n/a	n/a
Soil, geology and land use	**To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to land use management (rural and urban).**	The reduction in consumption will reduce abstraction, with minor beneficial impacts on river sedimentation processes.	Small scale /Certain /Temporary	**Minor Beneficial**
Air and Climate	**To reduce air pollutant and greenhouse gas emissions.**	Drought publicity will be communicated through radio and newspaper advertisements and as such will not involve any increased resource use, or increased CO_2 emissions. Reduced consumption will have a negligible impact on energy use for water supply and treatment.	Large scale /Certain /Temporary	**Negligible**
	To adapt and improve resilience to the threats of climate change.	Drought publicity will help to promote water efficiency but this will be a temporary campaign and will have a negligible benefit on future demand management for water to provide resilience against climate change impacts.	Large scale /Certain /Temporary	**Negligible**

DP Scheme: Drought publicity campaign		Media appeals for customer restraint		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Archaeology and Cultural Heritage	**To protect and enhance heritage assets, their setting and the historic environment.**	No adverse impacts of drought publicity on any heritage assets are anticipated. Reduced demand for water will provide a negligible benefit to water-dependent heritage assets.	Large scale /Certain /Temporary	**Negligible**
Landscape and Visual Amenity	**To protect and enhance the quality of, and improve access to, designated and undesignated landscapes, Green Belt and the built environment.**	No adverse impacts of drought publicity on landscape or visual amenity are anticipated. Reduced demand for water will provide a negligible benefit to water-dependent landscapes and visual amenity.	Large scale /Certain /Temporary	**Negligible**

DP Scheme: Free Meter Promotion		Enhance promotion to household customers of free water meter installations		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Biodiversity, flora and fauna	**To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity.**	The drought option will not have any direct impact upon biodiversity or ecology as the installation of meters is all internal within properties. There may be a small, but beneficial indirect effect upon aquatic ecology as a result of the reduced demand for water supplies.	Large scale /Certain /Temporary	**Minor Beneficial**
	To strengthen the connections between people and nature and realise the value of biodiversity.	Publicity surrounding the campaign will enable the public to make connections between water use and the effects on the environment, helping to encourage water efficiency to benefit the environment.	Large scale /Certain /Temporary	**Minor Beneficial**
Population and Human Health	**To improve human health and well-being of the area, improve access to recreation and the environment, and reduce inequalities.**	Meter promotion will result in water savings which will contribute towards improving the security of supply of water in the Severn Trent Water supply area so that essential supplies for public health can be maintained. No impacts on recreation are anticipated.	Large scale /Certain /Temporary	**Minor Beneficial**
Material assets and resource use	**To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill**	Meter promotion will help promote the more efficient use of water through the installation of water meters in household properties. This in turn will also help to reduce the overall water demand for the region. Publicity surrounding the campaign will result in increased awareness of the public of water resource consumption and waste (water). This option will reduce the amount of water used in the Severn Trent Region	Large scale /Certain /Temporary	**Minor Beneficial**
Water	**To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.**	Meter promotion will have a beneficial impact on water, acknowledging that reduced consumer demand for water will result in reduced requirement for abstraction at sources in drought conditions, helping to protect water quality and flow regimes.	Large scale /Certain /Temporary	**Minor Beneficial**
	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability		Large scale /Certain /Temporary	**Minor Beneficial**
	To ensure reliable, resilient and sustainable water resources for people, economy and the environment. **To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources.**	Meter promotion will result in water savings which will contribute towards improving the security of supply of water in the Severn Trent Water supply region. There is the potential for the drought publicity surrounding the meter promotion to raise awareness of the importance and value of water environment for health and well-being.	Large scale /Certain /Temporary	**Minor Beneficial**
	To reduce and manage fluvial and surface water flood risk.	This option will have no effects on flood risk.	n/a	n/a
Soil, geology and land use	**To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to land use management (rural and urban).**	The reduction in consumption will reduce abstraction, with minor beneficial impacts on river sedimentation processes.	Small scale /Certain /Temporary	**Minor Beneficial**

DP Scheme: Free Meter Promotion		Enhance promotion to household customers of free water meter installations		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Air and Climate	**To reduce air pollutant and greenhouse gas emissions.**	Meter promotion will be communicated through radio and newspaper advertisements and as such will not involve any increased resource use, or increased CO_2 emissions. Reduced consumption will have a negligible impact on energy use for water supply and treatment. It is expected that the drought option will have a small, temporary impact on GHG emissions through the increased number of vehicle journeys made to properties to provide advice, fit water saving devices and the regular maintenance/replacement of the devices.	Small scale /Certain /Temporary	**Minor Adverse**
	To adapt and improve resilience to the threats of climate change.	The scheme will make a small contribution to helping improve resilience to climate change by reducing water demand and consumption, as well as increasing awareness regarding the sustainable use of water resources.	Small scale /Certain / Permanent	**Negligible**
Archaeology and Cultural Heritage	**To protect and enhance heritage assets, their setting and the historic environment.**	No adverse impacts of meter promotion on any heritage assets are anticipated. Reduced demand for water will provide a negligible benefit to water-dependent heritage assets.	Large scale /Certain /Temporary	**Negligible**
Landscape and Visual Amenity	**To protect and enhance the quality of, and improve access to, designated and undesignated landscapes, Green Belt and the built environment.**	No adverse impacts of meter promotion on landscape or visual amenity are anticipated. Reduced demand for water will provide a negligible benefit to water-dependent landscapes and visual amenity.	Large scale /Certain /Temporary	**Negligible**

DP Scheme: Increase Water Conservation Campaign		Extra distribution of water saving devices, water audits for non-household customers and other similar activity		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Biodiversity, flora and fauna	**To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity.**	The drought option will not have any direct impact upon biodiversity or ecology as the installation of water efficiency measures is all internal within properties. There may be a small, but beneficial indirect effect upon aquatic ecology as a result of the reduced demand for water supplies.	Large scale /Certain /Temporary	**Minor Beneficial**
	To strengthen the connections between people and nature and realise the value of biodiversity.	Publicity surrounding the campaign will enable the public to make connections between water use and the effects on the environment, helping to encourage water efficiency to benefit the environment.	Large scale /Certain /Temporary	**Minor Beneficial**
Population and Human Health	**To improve human health and well-being of the area, improve access to recreation and the environment, and reduce inequalities.**	Water efficiency campaign will result in water savings which will contribute towards improving the security of supply of water in the Severn Trent Water supply area so that essential supplies for public health can be maintained. No impacts on recreation are anticipated.	Large scale /Certain /Temporary	**Minor Beneficial**
Material assets and resource use	**To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill**	Water efficiency campaign will help promote the more efficient use of water by household and business customers through advice and the installation of water efficiency measures. This in turn will also help to reduce the overall water demand for the region. Publicity surrounding the campaign will result in increased awareness of the public of water resource consumption and waste (water). This option will reduce the amount of water used in the Severn Trent Region	Large scale /Certain /Temporary	**Minor Beneficial**
Water	**To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.**	Water efficiency campaign will have a beneficial impact on water, acknowledging that reduced consumer demand for water will result in reduced requirement for abstraction at sources in drought conditions, helping to protect water quality and flow regimes.	Large scale /Certain /Temporary	**Minor Beneficial**
	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability		Large scale /Certain /Temporary	**Minor Beneficial**
	To ensure reliable, resilient and sustainable water resources for people, economy and the environment. **To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources.**	Water efficiency campaign will result in water savings which will contribute towards improving the security of supply of water in the Severn Trent Water supply region. There is the potential for the drought publicity to raise awareness of the importance and value of water environment for health and well-being.	Large scale /Certain /Temporary	**Minor Beneficial**
	To reduce and manage fluvial and surface water flood risk.	This option will have no effects on flood risk.	n/a	n/a
Soil, geology and land use	**To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to land use management (rural and urban).**	The reduction in consumption will reduce abstraction, with minor beneficial impacts on river sedimentation processes.	Small scale /Certain /Temporary	**Minor Beneficial**

DP Scheme: Increase Water Conservation Campaign		Extra distribution of water saving devices, water audits for non-household customers and other similar activity		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Air and Climate	**To reduce air pollutant and greenhouse gas emissions.**	Water efficiency campaign will be communicated through radio and newspaper advertisements and as such will not involve any increased resource use, or increased CO_2 emissions. Reduced consumption will have a negligible impact on energy use for water supply and treatment. It is expected that the drought option will have a small, temporary impact on GHG emissions through the increased number of vehicle journeys made to properties to provide advice, fit water saving devices and the regular maintenance/replacement of the devices.	Small scale /Certain /Temporary	**Minor Adverse**
	To adapt and improve resilience to the threats of climate change.	The scheme will make a small contribution to helping improve resilience to climate change by reducing water demand and consumption, as well as increasing awareness regarding the sustainable use of water resources.	Small scale /Certain / Permanent	**Negligible**
Archaeology and Cultural Heritage	**To protect and enhance heritage assets, their setting and the historic environment.**	No adverse impacts of water efficiency campaign on any heritage assets are anticipated. Reduced demand for water will provide a negligible benefit to water-dependent heritage assets.	Large scale /Certain /Temporary	**Negligible**
Landscape and Visual Amenity	**To protect and enhance the quality of, and improve access to, designated and undesignated landscapes, Green Belt and the built environment.**	No adverse impacts of water efficiency campaign on landscape or visual amenity are anticipated. Reduced demand for water will provide a negligible benefit to water-dependent landscapes and visual amenity.	Large scale /Certain /Temporary	**Negligible**

DP Scheme: Increased Leakage Detection and Repair		Ensure that all maintenance programmes are up-to-date and undertake additional leakage control, leading to demonstrable water savings.		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Biodiversity, flora and fauna	**To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity.**	Leakage control activities will have a limited adverse impact on biodiversity, flora or fauna assuming best practice methods are in place to protect the environment. The additional reduction in demand for water abstraction due to lower leakage levels will outweigh any potential adverse effects, giving minor beneficial effect significance overall.	Large scale/ Certain /Temporary	**Minor Beneficial**
	To strengthen the connections between people and nature and realise the value of biodiversity.	Leakage control activities will enable the public to make connections between water use and the effects on the environment, helping to encourage customers to repair leaks in their homes to benefit the environment.	Large scale/ Certain /Temporary	**Minor Beneficial**
Population and Human Health	**To improve human health and well-being of the area, improve access to recreation and the environment, and reduce inequalities.**	Leakage control activity will result in water savings which will contribute towards improving the security of supply of water in Severn Trent Water region so that essential supplies for public health can be maintained. Drinking water quality will not be affected by the leakage detection and repair. It is assumed that public rights of way will be maintained during repair activities and there will be no impacts upon recreational opportunity. As such, this option will have a minor beneficial impact due to the security of supply of drinking water.	Large scale/ Certain /Temporary	**Minor Beneficial**
Material assets and resource use	**To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill**	There will be vehicle movements associated with leakage control activities. Repairs may require raw materials. These negligible adverse effects will be outweighed by the reduction in water wasted and the energy saved in treating and pumping water. Leakage control activity will also result in increased awareness of the public of water resource consumption and to reduce wastage. This option will reduce the amount of water used in the Severn Trent Region.	Large scale/ Certain /Temporary	**Minor Beneficial**
Water	**To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.**	Leakage control activity will have a beneficial impact on water, acknowledging that reduced leakage will result in a reduced requirement for abstraction at sources in drought conditions, helping to protect water quality and flow regimes.	Large scale/ Certain /Temporary	**Minor Beneficial**
	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability		Large scale/ Certain /Temporary	**Minor Beneficial**
	To ensure reliable, resilient and sustainable water resources for people, economy and the environment. **To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources.**	Leakage control activity will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment.	Large scale/ Certain /Temporary	**Minor Beneficial**
	To reduce and manage fluvial and surface water flood risk.	This option will have no effects on flood risk.	n/a	n/a
Soil, geology and land use	**To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to land use management (rural and urban).**	Construction activities associated with leakage detection and repair activities may result in localised disturbance to soils and geology during the works. As leakage detection and repair activity will be on pipelines which are already *in situ*, this disturbance is anticipated to be short term, temporary and reversible. The reduction in consumption will reduce abstraction, with minor beneficial impacts on river sedimentation processes.	Small scale/ Certain /Temporary	**Minor Beneficial**
Air and Climate	**To reduce air pollutant and greenhouse gas emissions.**	Excavation works and repair activity will require the use of plant and vehicles, which will result in temporary increase in CO_2 emissions in the short term, associated with construction activities and vehicle use. Reduced consumption will have a negligible impact on energy use for water supply and treatment. Overall net effect assessed as minor adverse.	Large scale/ Certain /Temporary	**Minor Adverse**

DP Scheme: Increased Leakage Detection and Repair		Ensure that all maintenance programmes are up-to-date and undertake additional leakage control, leading to demonstrable water savings.		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
	To adapt and improve resilience to the threats of climate change.	Additional leakage control will help to reduce demand but this will be a temporary benefit driving leakage below economic levels. It will have a negligible benefit on future demand for water to provide resilience against climate change impacts.	Large scale/ Certain /Temporary	**Negligible**
Archaeology and Cultural Heritage	**To protect and enhance heritage assets, their setting and the historic environment.**	Leakage detection and repair activity will be on pipelines which are already in situ, and as such, it is not anticipated that any sites of archaeological or cultural heritage importance will be affected.	Large scale/ Certain /Temporary	**Negligible**
Landscape and Visual Amenity	**To protect and enhance the quality of, and improve access to, designated and undesignated landscapes, Green Belt and the built environment.**	Although there will be some temporary, short term impacts of leakage detection and repair activity upon localised landscapes and the built environment, the effect of the leakage detection and repair is not anticipated to have any long term impacts upon landscape, as the works will be on pipelines which are already *in situ*	Large scale/ Certain /Temporary	**Negligible**

DP Scheme: Temporary Use Ban		Restrictions on the use of hosepipes for a range of uses, including the washing of vehicles and boats, watering gardens and sports grounds and filling of paddling pools in line with the Temporary Use Ban regulations		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Biodiversity, flora and fauna	**To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity.**	The Temporary Use Ban is considered to have no impact on biodiversity, flora or fauna. The ban will reduce consumer demand for water and will result in reduced requirement for abstraction at sources (and therefore, potential for positive impacts on flow sensitive habitats/species). Savings will likely be greater than for leakage control and publicity.	Large scale/ Certain/ Temporary	**Moderate Beneficial**
	To strengthen the connections between people and nature and realise the value of biodiversity.	The ban will enable the public to make connections between water use and the effects on the environment, helping to encourage customers to use water wisely to benefit the environment.	Large scale/ Certain/ Temporary	**Minor Beneficial**
Population and Human Health	**To improve human health and well-being of the area, improve access to recreation and the environment, and reduce inequalities.**	The ban will result in water savings which will contribute towards improving the security of supply of water in Severn Trent Water region so that essential supplies for public health can be maintained. However, elderly and frail customers may have difficulties with watering plants or washing their vehicles by hand. There may also be reduced recreational opportunities due to ban on filling paddling pools and domestic pools. There will adverse effects on turf growers and garden centres due to reduced demand for their products. Overall effects are therefore mixed	Large scale/ Certain/ Temporary	**Mixed**
Material assets and resource use	**To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill**	The reduction in water use will reduce the energy needed in treating and pumping water. The ban will also increase awareness of the public of water resource consumption and to reduce wastage. This option will reduce the amount of water used in the Severn Trent Region.	Large scale/ Certain/ Temporary	**Minor Beneficial**
Water	**To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.**	The ban will have a beneficial impact resulting in a reduced requirement for abstraction at sources in drought conditions, helping to protect water quality and flow regimes.	Large scale/ Certain/ Temporary	**Minor Beneficial**
	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability		Large scale/ Certain/ Temporary	**Minor Beneficial**
	To ensure reliable, resilient and sustainable water resources for people, economy and the environment. **To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources.**	The ban will reduce non-essential water use and contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. The ban will help to promote efficient use of water and how this helps to protect the environment and safeguard water supplies.	Large scale/ Certain/ Temporary	**Minor Beneficial**
	To reduce and manage fluvial and surface water flood risk.	This option will have no effects on flood risk.	n/a	n/a
Soil, geology and land use	**To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to land use management (rural and urban).**	Impacts of the ban on soil, geology and land use are anticipated to be no greater than negligible as other means of watering gardens are available. The reduction in consumption will reduce abstraction with minor beneficial impacts on river sedimentation processes.	Small scale/ Certain/ Temporary	**Minor Beneficial**
Air and Climate	**To reduce air pollutant and greenhouse gas emissions.**	Reduced water consumption will have a negligible impact on energy use for water supply and treatment. The Drought Order will reduce dust suppression and reduce watering of soils, leading to localised increases in air pollutants.	Large scale/ Certain/ Temporary	**Negligible**
	To adapt and improve resilience to the threats of climate change.	The ban will help to reduce demand but this will be a temporary benefit only. It will have a negligible benefit on future demand for water to provide resilience against climate change impacts.	Large scale/ Certain/ Temporary	**Negligible**

DP Scheme: Temporary Use Ban		Restrictions on the use of hosepipes for a range of uses, including the washing of vehicles and boats, watering gardens and sports grounds and filling of paddling pools in line with the Temporary Use Ban regulations		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Archaeology and Cultural Heritage	**To protect and enhance heritage assets, their setting and the historic environment.**	The ban is expected to have no more than a negligible impact on heritage assets.	Large scale/ Certain/ Temporary	**Negligible**
Landscape and Visual Amenity	**To protect and enhance the quality of, and improve access to, designated and undesignated landscapes, Green Belt and the built environment.**	The ban will reduce watering of gardens and lawns with some minor adverse impact on visual amenity in urban landscapes in particular. The impacts are temporary only.	Large scale/ Certain/ Temporary	**Minor Adverse**

DP Scheme: Abbey Green Borehole for non-drought permit use		Re-use of existing/underutilised borehole licences to transfer water within licence conditions directly to water treatment works.		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Biodiversity, flora and fauna	**To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity.**	The scheme was assessed for its possible impacts upon the European Designated site South Pennine Moors SAC (UK003028). This assessment concluded that impacts arising from the drought option are unlikely to have an adverse effect on the qualifying feature as the site is not hydrologically linked to the impacted groundwater. This option would be abstracting in accordance with licence conditions and doesn't involve discharges to the environment. No impacts on other biodiversity features or habitats are envisaged.	Small scale/Certain/Temporary	**Negligible**
	To strengthen the connections between people and nature and realise the value of biodiversity.	None	n/a	n/a
Population and Human Health	**To improve human health and well-being of the area, improve access to recreation and the environment, and reduce inequalities.**	The drought option will help to maintain essential public water supplies during drought conditions and therefore help maintain public health. The scheme will not affect access to open spaces but may have an impact on informal recreation activities. Peak recreational use will coincide with hot, dry periods thus the impact on minimum summer flows is potentially significant. The option has the potential to promote the value of water and its sustainable use, through increased customer awareness of the drought.	Small scale/Certain/Temporary	**Mixed**
Material assets and resource use	**To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill**	No impacts on material assets are anticipated. Option involves modifications to abstraction from the boreholes only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure. The option has the potential to promote an increased efficient use of water through greater awareness of the drought.	Small scale/Certain/Temporary	**Negligible**
Water	**To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.**	The water abstracted from Abbey Green borehole will be transferred directly to a treatment works so impacts on water quality are expected to be negligible. The abstraction will be within existing abstraction licence limits and would only have a negligible impact on water quality in the aquifer.	Small scale/Certain/Temporary	**Negligible**
	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability	The drought option will allow abstraction of groundwater from Abbey Green boreholes under drought conditions to help maintain a reliable water supply regime, however the current status of the groundwater waterbody (GB40401G302000) is 'Poor' due to over abstraction.	Small scale/Certain/Temporary	**Mixed**
	To ensure reliable, resilient and sustainable water resources for people, economy and the environment. **To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources.**	Drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. Drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	Small scale/Certain/Temporary	**Minor Beneficial**
	To reduce and manage fluvial and surface water flood risk.	The drought option will have no adverse effects on flood risk.	n/a	n/a
Soil, geology and land use	**To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to land use management (rural and urban).**	There would be no land use changes associated with this drought option.	n/a	n/a

DP Scheme: Abbey Green Borehole for non-drought permit use		Re-use of existing/underutilised borehole licences to transfer water within licence conditions directly to water treatment works.		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Air and Climate	**To reduce air pollutant and greenhouse gas emissions.**	No operational impacts on air quality are anticipated. The drought option involves modifications to abstractions from boreholes only. No changes to energy use, and therefore greenhouse gas emissions, are envisaged.	Small scale/Certain/Temporary	**Negligible**
	To adapt and improve resilience to the threats of climate change.	Drought options are a key component of Severn Trent Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	Small scale/Certain/Temporary	**Minor Beneficial**
Archaeology and Cultural Heritage	**To protect and enhance heritage assets, their setting and the historic environment.**	The remains of Dieu-La-Cres Abbey are in close proximity to Abbey Green Borehole (350m distance). As the operation of the drought options does not involve any construction activity and this heritage asset is not water dependant there are no impacts predicted.	Small scale/Certain/Temporary	**Negligible**
Landscape and Visual Amenity	**To protect and enhance the quality of, and improve access to, designated and undesignated landscapes, Green Belt and the built environment.**	No designated landscapes in the immediate vicinity.	n/a	n/a

DP Scheme: Siskin Drive		Re-use of existing/underutilised licence to transfer de-chlorinated water from Siskin Drive Booster station by existing pipeline to Draycote raw water reservoir. This drought option was used in 2011-2012 and achieved an output of 20 Ml/d.		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Biodiversity, flora and fauna	**To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity.**	The operation of the drought option will involve the transfer of de-chlorinated water from Siskin Drive pumping station to Draycote raw water reservoir (Draycote Water). This transfer will require a discharge consent from the Environment Agency. The current WFD potential of Draycote Water (GB30938250) is moderate. The impacts on reservoir ecology from the discharge of de-chlorinated water are uncertain, but these impacts are likely to be negligible. Draycote Meadows SSSI lies within 2km of Draycote Water. These meadows are examples of a grassland community characterised by crested dog's-tail (*Cynosurus cristatus*) and common knapweed (*Centaurea nigra*) and are unlikely to be impacted by the operation of the drought permit.	Small scale/Uncertain/Temporary	**Negligible**
	To strengthen the connections between people and nature and realise the value of biodiversity.	None	n/a	n/a
Population and Human Health	**To improve human health and well-being of the area, improve access to recreation and the environment, and reduce inequalities.**	The drought option will help to maintain essential public water supplies during drought conditions and therefore help maintain public health. The scheme will not affect access to open spaces but may have an impact on informal recreation activities. Peak recreational use will coincide with hot, dry periods thus the impact on minimum summer flows is potentially significant. The option has the potential to promote the value of water and its sustainable use, through increased customer awareness of the drought.	Small scale/Certain/Temporary	**Mixed**
Material assets and resource use	**To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill**	No impacts on material assets are anticipated. No changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure. The option has the potential to promote an increased efficient use of water through greater awareness of the drought.	Small scale/Certain/Temporary	**Negligible**
Water	**To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.**	This drought option involves the transfer of de-chlorinated water from Siskin Drive booster station to Draycote Water. The impacts of this transfer on the water quality of Draycote Water are uncertain and require further investigation but are unlikely to be greater than minor significance. Severn Trent Water are undertaking monitoring of water quality in order to further understand these impacts.	Small scale/Uncertain/Temporary	**Minor Adverse**
	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability	The drought option will involve transfer water within existing abstraction licenses from Siskin Drive Booster Station in drought conditions to increase reservoir levels to help maintain a reliable water supply regime.	Small scale/Certain/Temporary	**Moderate Beneficial**
	To ensure reliable, resilient and sustainable water resources for people, economy and the environment. **To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources.**	Drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. Drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	Small scale/Certain/Temporary	**Moderate Beneficial**
	To reduce and manage fluvial and surface water flood risk.	The drought option will have no adverse effects on flood risk.	n/a	n/a

DP Scheme: Siskin Drive		Re-use of existing/underutilised licence to transfer de-chlorinated water from Siskin Drive Booster station by existing pipeline to Draycote raw water reservoir. This drought option was used in 2011-2012 and achieved an output of 20 Ml/d.		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Soil, geology and land use	**To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to land use management (rural and urban).**	There would be no land use changes associated with this drought option.	n/a	n/a
Air and Climate	**To reduce air pollutant and greenhouse gas emissions.**	No operational impacts on air quality are anticipated. The drought option involves modifications to existing distribution schemes. No changes to energy use, and therefore greenhouse gas emissions, are envisaged.	Small scale/Certain/Temporary	**Negligible**
	To adapt and improve resilience to the threats of climate change.	Drought options are a key component of Severn Trent Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	Small scale/Certain/Temporary	**Minor Beneficial**
Archaeology and Cultural Heritage	**To protect and enhance heritage assets, their setting and the historic environment.**	No heritage assets in the immediate vicinity.	n/a	n/a
Landscape and Visual Amenity	**To protect and enhance the quality of, and improve access to, designated and undesignated landscapes, Green Belt and the built environment.**	No designated landscapes in the immediate vicinity.	n/a	n/a

DP Scheme: Rothley Brook		Re-use of existing/underutilised abstraction licence for Rothley Brook to discharge to Cropston Reservoir.		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Biodiversity, flora and fauna	**To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity.**	The operation of the drought option would see water discharge from Rothley Brook into Cropston reservoir which is part of Bradgate Park and Cropston Reservoir SSSI. The SSSI is designated for marginal plants and breeding birds which may benefit from reservoir levels being maintained for longer during drought conditions. Several other designated sites are located in the vicinity of Cropston Reservoir (Swithland Wood and The Brand SSSI, Buddon Wood and Swithland Reservoir SSSI, Main Quarry, Mount Sorrel SSSI, Sheet Hedges Wood SSSI, Groby Pool and Woods SSSI). The impact of the drought option is unlikely to be of significant intensity as the discharge involved is within current licenced conditions and agreed mode of operation.	Small scale/Uncertain/Temporary	**Mixed**
	To strengthen the connections between people and nature and realise the value of biodiversity.	None	n/a	n/a
Population and Human Health	**To improve human health and well-being of the area, improve access to recreation and the environment, and reduce inequalities.**	The drought option will help to maintain essential public water supplies during drought conditions and therefore help maintain public health. The scheme will not affect access to open spaces but may have an impact on informal recreation activities around Rothley Brook. Peak recreational use will coincide with hot, dry periods thus the impact on minimum summer flows is potentially significant. The option has the potential to promote the value of water and its sustainable use, through increased customer awareness of the drought.	Small scale/Certain/Temporary	**Mixed**
Material assets and resource use	**To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill**	No impacts on material assets are anticipated. Option involves modifications to existing abstraction regime and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure. The option has the potential to promote an increased efficient use of water through greater awareness of the drought.	Small scale/Certain/Temporary	**Negligible**
Water	**To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.**	The operation of this drought option will involve discharge of water from Rothley Brook into Cropston Reservoir under existing licence conditions and modes of operation. The impact of the discharge on water quality in Cropston Reservoir (part of Bradgate Park and Cropston Reservoir SSSI) is uncertain but concerns exist around the potential for this discharge to increase phosphate levels within the reservoir. Rothley Brook (GB104028046730) is currently assessed as being at good WFD status for phosphate and Cropston Reservoir (GB30436331) is assessed as being at poor WFD status for phosphate so any impacts on phosphate levels are likely to be of low significance.	Small scale/Uncertain/Temporary	**Negligible**
	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability	The drought option will involve the discharge of water in drought conditions into Cropston Reservoir under existing licence conditions to increase reservoir levels and help maintain a reliable water supply regime.	Small scale/Certain/Temporary	**Minor Beneficial**
	To ensure reliable, resilient and sustainable water resources for people, economy and the environment. **To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources.**	Drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. Drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	Small scale/Certain/Temporary	**Minor Beneficial**
	To reduce and manage fluvial and surface water flood risk.	The drought option will have no adverse effects on flood risk.	n/a	n/a

DP Scheme: Rothley Brook		Re-use of existing/underutilised abstraction licence for Rothley Brook to discharge to Cropston Reservoir.		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Soil, geology and land use	**To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to land use management (rural and urban).**	There would be no land use changes associated with this drought option.	n/a	n/a
Air and Climate	**To reduce air pollutant and greenhouse gas emissions.**	No operational impacts on air quality are anticipated. The drought option involves modifications to current abstraction arrangement. No changes to energy use, and therefore greenhouse gas emissions, are envisaged.	Small scale/Certain/Temporary	**Negligible**
	To adapt and improve resilience to the threats of climate change.	Drought options are a key component of Severn Trent Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	Small scale/Certain/Temporary	**Minor Beneficial**
Archaeology and Cultural Heritage	**To protect and enhance heritage assets, their setting and the historic environment.**	Site of Roman Villa within 3km of Cropston Reservoir	n/a	n/a
Landscape and Visual Amenity	**To protect and enhance the quality of, and improve access to, designated and undesignated landscapes, Green Belt and the built environment.**	No designated landscapes in the immediate vicinity.	n/a	n/a

DP Scheme: Beechtree Lane Boreholes		Re-use of existing/underutilised borehole licences to support the Elan Valley Aqueduct (EVA) during drought conditions. The licence for these boreholes permits abstraction of 18Ml/d maximum at each site. Total that can be abstracted from Norton emergency boreholes in any five year period is 1620 Ml. The use of the boreholes is linked to the Trimpley licence, the storage in Elan and the loss of the EVA.		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Biodiversity, flora and fauna	**To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity.**	The scheme was assessed for its possible impacts upon the European Designated site Fen's Pools SAC (UK0030150). The HRA concluded that impacts arising from the drought permit are unlikely to have an adverse effect on the qualifying feature as the site is not hydrologically linked to the impacted groundwater and any infrastructure development required is sufficiently isolated from the designated site for direct impacts on the species to be very unlikely. The scheme will help support the Elan Valley Aqueduct (EVA) during drought conditions allowing the reservoirs that contribute to the EVA to maintain higher water levels for longer. As a result the scheme may help mitigate any impacts arising from drought conditions on the European Designated sites in proximity to the Elan Valley reservoirs providing a net minor benefit overall.	Small scale/Uncertain/Temporary	**Mixed**
	To strengthen the connections between people and nature and realise the value of biodiversity.	None	n/a	n/a
Population and Human Health	**To improve human health and well-being of the area, improve access to recreation and the environment, and reduce inequalities.**	The drought permit will help to maintain essential public water supplies during drought conditions and therefore help maintain public health. The scheme will not affect access to open spaces but may have an impact on informal recreation activities. Peak recreational use will coincide with hot, dry periods thus the impact on minimum summer flows is potentially significant. The option has the potential to promote the value of water and its sustainable use, through increased customer awareness of the drought.	Small scale/Certain/Temporary	**Mixed**
Material assets and resource use	**To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill**	No impacts on material assets are anticipated. Option involves modifications to abstraction from the boreholes only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure. The option has the potential to promote an increased efficient use of water through greater awareness of the drought.	Small scale/Certain/Temporary	**Negligible**
Water	**To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.**	The impact on water quality is expected to be negligible overall. As a result of the Elan Valley reservoirs being able to maintain higher water levels for longer they may experience an increase in water quality in comparison to that under normal drought conditions. Conversely the boreholes are known to have potential operational issues associated with turbidity and high sand content which could impact water quality in an adverse manner.	Small scale/Uncertain/Temporary	**Mixed**
	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability	The drought permit will allow abstraction of groundwater from Beechtree Lane boreholes under drought conditions to help maintain a reliable water supply regime and support the Elan Reservoir and Elan Valley Aqueduct (EVA).	Small scale/Certain/Temporary	**Mixed**
	To ensure reliable, resilient and sustainable water resources for people, economy and the environment. **To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources.**	Drought permit will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. Drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	Small scale/Certain/Temporary	**Minor Beneficial**
	To reduce and manage fluvial and surface water flood risk.	The drought permit will have no adverse effects on flood risk.	n/a	n/a

DP Scheme: Beechtree Lane Boreholes		Re-use of existing/underutilised borehole licences to support the Elan Valley Aqueduct (EVA) during drought conditions. The licence for these boreholes permits abstraction of 18Ml/d maximum at each site. Total that can be abstracted from Norton emergency boreholes in any five year period is 1620 Ml. The use of the boreholes is linked to the Trimpley licence, the storage in Elan and the loss of the EVA.		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Soil, geology and land use	**To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to land use management (rural and urban).**	There would be no land use changes associated with this drought permit.	n/a	n/a
Air and Climate	**To reduce air pollutant and greenhouse gas emissions.**	No operational impacts on air quality are anticipated. The drought permit involves modifications to abstractions from boreholes only. No changes to energy use, and therefore greenhouse gas emissions, are envisaged.	Small scale/Certain/Temporary	**Negligible**
	To adapt and improve resilience to the threats of climate change.	Drought permits are a key component of Severn Trent Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	Small scale/Certain/Temporary	**Minor Beneficial**
Archaeology and Cultural Heritage	**To protect and enhance heritage assets, their setting and the historic environment.**	There are no known archaeological or cultural heritage assets within proximity to the scheme	n/a	n/a
Landscape and Visual Amenity	**To protect and enhance the quality of, and improve access to, designated and undesignated landscapes, Green Belt and the built environment.**	No designated landscapes in the immediate vicinity.	n/a	n/a

DP Scheme: Norton C and D boreholes		Re-use of existing/underutilised borehole licences to support the Elan Valley Aqueduct (EVA) during drought conditions. The licence for these boreholes permits abstraction of 18Ml/d maximum at each site. Total that can be abstracted from Norton emergency boreholes in any five year period is 1215 Ml. The use of the boreholes is linked to the Trimpley licence, the storage in Elan and the loss of the EVA.		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Biodiversity, flora and fauna	**To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity.**	The scheme was assessed for its possible impacts upon the European Designated site Fen's Pools SAC (UK0030150). The HRA concluded that impacts arising from the drought permit are unlikely to have an adverse effect on the qualifying feature as the site is not hydrologically linked to the impacted groundwater and any infrastructure development required is sufficiently isolated from the designated site for direct impacts on the species to be very unlikely. The scheme will help support the Elan Valley Aqueduct (EVA) during drought conditions allowing the reservoirs that contribute to the EVA to maintain higher water levels for longer. As a result the scheme may help mitigate any impacts arising from drought conditions on the European Designated sites in proximity to the Elan Valley reservoirs providing a net minor benefit overall.	Small scale/Uncertain/Temporary	**Mixed**
	To strengthen the connections between people and nature and realise the value of biodiversity.	None	n/a	n/a
Population and Human Health	**To improve human health and well-being of the area, improve access to recreation and the environment, and reduce inequalities.**	The drought permit will help to maintain essential public water supplies during drought conditions and therefore help maintain public health. The scheme will not affect access to open spaces but may have an impact on informal recreation activities. Peak recreational use will coincide with hot, dry periods thus the impact on minimum summer flows is potentially significant. The option has the potential to promote the value of water and its sustainable use, through increased customer awareness of the drought.	Small scale/Certain/Temporary	**Mixed**
Material assets and resource use	**To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill**	No impacts on material assets are anticipated. Option involves modifications to abstraction from the boreholes only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure. The option has the potential to promote an increased efficient use of water through greater awareness of the drought.	Small scale/Certain/Temporary	**Negligible**
Water	**To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.**	The impact on water quality is expected to be negligible overall. As a result of the Elan Valley reservoirs being able to maintain higher water levels for longer they may experience an increase in water quality in comparison to that under normal drought conditions. Conversely the boreholes are known to have potential operational issues associated with turbidity and high sand content which could impact water quality in an adverse manner.	Small scale/Uncertain/Temporary	**Mixed**
	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability	The drought permit will allow abstraction of groundwater from Norton C and D boreholes under drought conditions to help maintain a reliable water supply regime and support the Elan Reservoir and Elan Valley Aqueduct (EVA).	Small scale/Certain/Temporary	**Mixed**
	To ensure reliable, resilient and sustainable water resources for people, economy and the environment. **To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources.**	Drought permit will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. Drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	Small scale/Certain/Temporary	**Minor Beneficial**

DP Scheme: Norton C and D boreholes		Re-use of existing/underutilised borehole licences to support the Elan Valley Aqueduct (EVA) during drought conditions. The licence for these boreholes permits abstraction of 18Ml/d maximum at each site. Total that can be abstracted from Norton emergency boreholes in any five year period is 1215 Ml. The use of the boreholes is linked to the Trimpley licence, the storage in Elan and the loss of the EVA.		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
	To reduce and manage fluvial and surface water flood risk.	The drought permit will have no adverse effects on flood risk.	n/a	n/a
Soil, geology and land use	**To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to land use management (rural and urban).**	There would be no land use changes associated with this drought permit.	n/a	n/a
Air and Climate	**To reduce air pollutant and greenhouse gas emissions.**	No operational impacts on air quality are anticipated. The drought permit involves modifications to abstractions from boreholes only. No changes to energy use, and therefore greenhouse gas emissions, are envisaged.	Small scale/Certain/Temporary	**Negligible**
	To adapt and improve resilience to the threats of climate change.	Drought permits are a key component of Severn Trent Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	Small scale/Certain/Temporary	**Minor Beneficial**
Archaeology and Cultural Heritage	**To protect and enhance heritage assets, their setting and the historic environment.**	There are no known archaeological or cultural heritage assets within proximity to the scheme	n/a	n/a
Landscape and Visual Amenity	**To protect and enhance the quality of, and improve access to, designated and undesignated landscapes, Green Belt and the built environment.**	No designated landscapes in the immediate vicinity.	n/a	n/a

DP Scheme: Derwent Valley Reservoirs		Reduce compensation flows from Ladybower Reservoir from 54 Ml/d (measured at Yorkshire Bridge), or from 72Ml/d if flow at St Mary's gauging station, Derby (DSM) is below 340Ml/d, to not less than 34 Ml/d measured at YB (regardless of flows at DSM). Reduce the combined flow of the compensation measures at Yorkshire Bridge and that measured below the River Noe/River Derwent confluence from 74 Ml/d (or 92 Ml/d when flow at DSM is <340 Ml/d) to 51 Ml/d.		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Biodiversity, flora and fauna	**To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity.**	The impacts of the drought permit are a reduction in the compensation flow from the reservoir, with the overall levels of the reservoir not impacted (i.e. this is a re-deployment of water not further abstraction from the reservoirs). Impact on South Pennine Moors SAC & SPA assessed as negligible as they are not hydrologically linked to the mainstem of the River Derwent and impacts do not extend to the tributaries, which are hydrologically linked to the European sites. Impacts arising from the scheme are not considered likely to have an adverse effect on the qualifying features of the Humber Estuary. The relaxation in compensatory flow provides 20Ml/d output, with the reduction in flow comprising 0.3% of the Q95 flow in the Humber Estuary. There are a number of other designated sites on upstream tributaries which will similarly not be impacted by the operation of the drought permit (The Dark Peak SSSI, Lower Hollins SSSI, Rowlee Bridge SSSI, Eastern Peak District Moors SSSI, Castleton SSSI). The impact on the River Derwent, Hathersage SSSI, located 5km downstream of Ladybower Reservoir, has been assessed as minor. The environmental assessment of the drought permit concluded the moderate negative hydrological impacts on the River Derwent from River Ashop to River Wye (GB104028057880), downstream of Ladybower Reservoir, could reduce the WFD status for Fish in the river reach to less than Good. The operation of the drought permit has been assessed overall as having a minor negative impact fish and macroinvertebrate communities.	Medium Scale/Certain/Temporary	**Minor Adverse**
	To strengthen the connections between people and nature and realise the value of biodiversity.	None	n/a	n/a
Population and Human Health	**To improve human health and well-being of the area, improve access to recreation and the environment, and reduce inequalities.**	The drought permit will help to maintain essential public water supplies during drought conditions and therefore help maintain public health. The scheme will not affect access to open spaces but may have a minor impact on informal recreation activities. The option has the potential to promote the value of water and its sustainable use, through increased customer awareness of the drought.	Medium scale/Certain/Temporary	**Mixed**
Material assets and resource use	**To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill**	No impacts on material assets are anticipated. Option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure. The option has the potential to promote an increased efficient use of water through greater awareness of the drought.	Medium scale/Certain/Temporary	**Negligible**
Water	**To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.**	The water quality impact risk has been assessed as negligible for all WFD water bodies within the River Derwent (*River Derwent from River Ashop to River Wye GB104028057880;* River Derwent from R Wye to R Amber GB104028052390; River Derwent from R Amber to Bottle Brook GB104028052310).	Medium scale/Certain/Temporary	**Negligible**

DP Scheme: Derwent Valley Reservoirs		Reduce compensation flows from Ladybower Reservoir from 54 Ml/d (measured at Yorkshire Bridge), or from 72Ml/d if flow at St Mary's gauging station, Derby (DSM) is below 340Ml/d, to not less than 34 Ml/d measured at YB (regardless of flows at DSM). Reduce the combined flow of the compensation measures at Yorkshire Bridge and that measured below the River Noe/River Derwent confluence from 74 Ml/d (or 92 Ml/d when flow at DSM is <340 Ml/d) to 51 Ml/d.		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability	The drought permit will reduce compensation flows from Ladybower Reservoir to the River Derwent system during all flow conditions at Derby St Mary's. The impact on the River Derwent immediately downstream of Ladybower Reservoir (at Yorkshire Bridge) has been assessed as moderate adverse, relating to a reduction in low flows, with associated reduction in wetted depth and width. This impact declines to minor adverse by 5km downstream of Ladybower Reservoir. The drought permit will not impact on moderate to high flow regime in the receiving water courses. The drought permit has been assessed as having a minor adverse impact on downstream abstractions.	Medium scale/Ccertain/Temporary	**Minor Adverse**
	To ensure reliable, resilient and sustainable water resources for people, economy and the environment. **To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources.**	Drought permit will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. Drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	Large scale/Certain/Temporary	**Moderate Beneficial**
	To reduce and manage fluvial and surface water flood risk.	The drought permit will have no adverse effects on flood risk.	n/a	n/a
Soil, geology and land use	**To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to land use management (rural and urban).**	There would be no land use changes associated with this drought permit. The impact on fluvial geomorphology due to lower flows is uncertain but assessed as negligible (potential for increased erosion of river banks and sediment deposition) when compared with the situation under natural drought conditions.	Small scale/Uncertain/Temporary	**Negligible**
Air and Climate	**To reduce air pollutant and greenhouse gas emissions.**	No operational impacts on air quality are anticipated. The drought permit involves modifications to abstractions and prescribed flows only. No changes to energy use, and therefore greenhouse gas emissions, are envisaged.	Large scale/Certain/Temporary	**Negligible**
	To adapt and improve resilience to the threats of climate change.	Drought permits are a key component of Severn Trent Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	Large scale/Certain/Temporary	**Minor Beneficial**
Archaeology and Cultural Heritage	**To protect and enhance heritage assets, their setting and the historic environment.**	The hydrological impact of the drought permit has been assessed as minor in the reaches of the River Derwent adjacent to the Derwent Valley Mills World Heritage Site and Chatsworth Park. It is possible that the aesthetic quality of the Derwent Valley Mills World Heritage Site could be affected by the drought permit, as could the aesthetic quality of the River Derwent as it flows through the Chatsworth Estate. However, the drought permit will provide some water for a longer period than if the normal compensation flow were maintained, or indeed in comparison with natural conditions	Medium scale/Certain/Temporary	**Mixed**
Landscape and Visual Amenity	**To protect and enhance the quality of, and improve access to, designated and undesignated landscapes, Green Belt and the built environment.**	No designated landscapes in the immediate vicinity. The drought permit will enable Ladybower Reservoir to maintain higher water levels for longer, but the receiving water bodies will experience lower water levels.	Large scale/Certain/Temporary	**Mixed**

DP Scheme: River Derwent at Ambergate		Partial relaxation of the control flows in the River Derwent at St Mary's Bridge (Derby). This will allow the abstraction of up to 320 Ml/d at Ambergate when the low in the River Derwent at Derby is not less than 500 Ml/d, rather than the present flow of 680 Ml/d).		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Biodiversity, flora and fauna	**To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity.**	The drought permit will allow increased abstraction from the River Derwent at Ambergate when flows at St Mary's Bridge, Derby are between 500 Ml/d and 680 Ml/d. The environmental assessment concluded that the hydrological impact of the drought permit operation will result in a minor negative impact on fish and macrioinveretebrate communities. The HRA concluded no LSE on European sites from the operation of the drought permit. Shining Cliff Woods SSSI, Cromford Canal SSSI & LNR are located upstream of the abstraction point and will not be impacted by the operation of the drought permit. Duffield Millennium Meadow LNR is located adjacent to the River Derwent next to the confluence with the River Ecclesbourne, but is hydrologically dependent on the River Ecclesbourne so will not be impacted by the operation of the drought permit. Three additional LNRs (Belper Parks, Allestree park, Nutwood/Darley Tip) located adjacent to the River Derwent have also been assessed as being at negligible risk of impacts from the drought permit operation due to the predicted minor hydrological impact of the drought permit in their vicinity.	Medium Scale/Certain/Temporary	**Minor Adverse**
	To strengthen the connections between people and nature and realise the value of biodiversity.	None	n/a	n/a
Population and Human Health	**To improve human health and well-being of the area, improve access to recreation and the environment, and reduce inequalities.**	The drought permit will help to maintain essential public water supplies during drought conditions and therefore help maintain public health. The scheme will not affect access to open spaces but may have a minor impact on informal recreation activities in the vicinity of Belper. The option has the potential to promote the value of water and its sustainable use, through increased customer awareness of the drought.	Medium scale/Certain/Temporary	**Mixed**
Material assets and resource use	**To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill**	No impacts on material assets are anticipated. Option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure. The option has the potential to promote an increased efficient use of water through greater awareness of the drought.	Medium scale/Certain/Temporary	**Negligible**
Water	**To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.**	Water quality downstream of the Ambergate abstraction is assessed as being at minor risk of adverse impact risk due to a reduced dilution of pollutants. The impact has been assessed as negligible for all WFD water bodies within the River Derwent (*River Derwent from River Ashop to River Wye GB104028057880;* River Derwent from R Wye to R Amber GB104028052390; River Derwent from R Amber to Bottle Brook GB104028052310)..	Small scale/Certain/Temporary	**Minor Adverse**
	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability	The drought permit will allow abstraction up to 320 Ml/d at Ambergate when flows at Derby St Mary's are between 500 and 680 Ml/d. Under normal conditions abstraction must drop to not more than 15 Ml/d when flows at Derby St Marys fall below 680 Ml/d. The impact on the River Derwent immediately downstream of the Ambergate abstraction point has been assessed as moderate adverse, relating to a reduction in low flows, with associated reduction in wetted depth and width. This impact declines to minor adverse by the Allestree hydrology assessment point 14km downstream of Ambergate. The drought permit has been assessed as having a minor adverse impact on downstream abstractions.	Medium scale/Certain/Temporary	**Minor Adverse**

DP Scheme: River Derwent at Ambergate		Partial relaxation of the control flows in the River Derwent at St Mary's Bridge (Derby). This will allow the abstraction of up to 320 Ml/d at Ambergate when the low in the River Derwent at Derby is not less than 500 Ml/d, rather than the present flow of 680 Ml/d).		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
	To ensure reliable, resilient and sustainable water resources for people, economy and the environment. **To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources.**	Drought permit will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. Drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	Large scale/Short term/Temporary	**Major Beneficial**
	To reduce and manage fluvial and surface water flood risk.	The drought permit will have no adverse effects on flood risk.	n/a	n/a
Soil, geology and land use	**To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to land use management (rural and urban).**	There would be no land use changes associated with this drought permit. The impact on fluvial geomorphology due to lower flows is uncertain but assessed as negligible (potential for increased erosion of river banks and sediment deposition) when compared with the situation under natural drought conditions.	Small scale/Uncertain/Temporary	**Negligible**
Air and Climate	**To reduce air pollutant and greenhouse gas emissions.**	No operational impacts on air quality are anticipated. The drought permit involves modifications to abstractions and prescribed flows only. No changes to energy use, and therefore greenhouse gas emissions, are envisaged.	Large scale/Certain/Temporary	**Negligible**
	To adapt and improve resilience to the threats of climate change.	Drought permits are a key component of Severn Trent Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	Large scale/Certain/Temporary	**Minor Beneficial**
Archaeology and Cultural Heritage	**To protect and enhance heritage assets, their setting and the historic environment.**	The hydrological impact of the drought permit has been assessed as moderate in the reaches of the River Derwent adjacent to the Derwent Valley Mills World Heritage Site (WHS) and Duffield Bride Scheduled Ancient Monument (SAM). The River Derwent is a key feature of the WHS and it is possible that the aesthetic quality of the site could be affected by the drought permit. However, the drought permit will provide some water for a longer period than if the normal compensation flow were maintained, or indeed in comparison with natural conditions. No impacts from the operation of the drought permit on Duffield Bridge are likely. Littlechester Roman site, Roman Bathhouse at Parkers Piece and St Mary's Bridge are all SAMs located adjacent to the River Derwent in the reach between Allestree and St Mary's Bridge, however the hydrological impact in this reach has been assessed as minor and no impacts from the operation of the drought permit are likely. River Gardens, Belper as well as multiple listed buildings are situated along the impacted reaches of the River Derwent but no impacts from the operation of the drought permit are likely.	Medium scale/Certain/Temporary	**Moderate Adverse**
Landscape and Visual Amenity	**To protect and enhance the quality of, and improve access to, designated and undesignated landscapes, Green Belt and the built environment.**	No designated landscapes in the immediate vicinity. The drought permit will enable Carsington Reservoir to maintain higher water levels for longer, but the receiving water bodies will experience lower water levels.	Large scale/Certain/Temporary	**Mixed**

DP Scheme: Tittesworth Reservoir and the River Churnet		Allow the compensation flow at Tittesworth Reservoir (including Solomon's Hollow) to be reduced from a minimum of 14.8 Ml/d to a minimum of 6.8 Ml/d. Authorise abstracting 8 Ml/d from the Abbey Green borehole, operating outside the borehole's abstraction licence limits, to discharge into the River Churnet 1.8 km downstream of Tittesworth Reservoir. Remove the requirement for a total minimum discharge of 19.32 Ml/d to be released from a combination of Tittesworth Reservoir (including Solomon's Hollow) and Deep Hayes.		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Biodiversity, flora and fauna	**To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity.**	The scheme has been assessed for its potential to have impacts on the European designated sites of the Humber Estuary SAC (UK0030170), Humber Estuary SPA (UK9006111), Humber Estuary Ramsar (UK11031), South Pennine Moors SAC (UK0030280) and Peak District Moors (South Pennine Moors Phase 1) SPA (UK9007021). The HRA concluded that the scheme would have no LSE on the European Designated sites and that any further assessment would not be necessary. Impacts arising from the scheme are not considered likely to have an adverse effect on the qualifying features of the Humber Estuary designated sites. The flow contribution of the River Churnet into the Humber Estuary is minimal (0.57% at Q95) and the effects are mitigated by the release of water from Abbey Green borehole. Consequently, the reduction in flows associated with the drought permit are considered to be negligible. The EARs noted that the impacts of the drought permit have the potential to have negative impacts on several species including: • Minor negative impacts on brown trout • Moderate negative impacts on brook lamprey • Minor negative impacts on trout migration • Moderate negative impacts on salmon migration • Minor negative impacts on macroinvertebrates	Medium scale/Certain/Temporary	**Minor Adverse**
	To strengthen the connections between people and nature and realise the value of biodiversity.	None	n/a	n/a
Population and Human Health	**To improve human health and well-being of the area, improve access to recreation and the environment, and reduce inequalities.**	The drought permit will help to maintain essential public water supplies during drought conditions and therefore help maintain public health. The scheme will not affect access to open spaces but may have an impact on informal recreation activities. The reach of the river between Tittesworth Reservoir and Abbey Green borehole discharge point where the largest hydrological changes are expected is not considered to be of high amenity or leisure value, therefore the impact has been assessed as minor adverse. Impacts upon Tittesworth Reservoir, which is considered to be an amenity site of regional value, are assessed as negligible. The option has the potential to promote the value of water and its sustainable use, through increased customer awareness of the drought.	Medium scale/Certain/Temporary	**Mixed**
Material assets and resource use	**To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill**	No impacts on material assets are anticipated. Option involves modifications to abstraction and prescribed flows only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure. The option has the potential to promote an increased efficient use of water through greater awareness of the drought.	Small scale/Certain/Temporary	**Negligible**

DP Scheme: Tittesworth Reservoir and the River Churnet		Allow the compensation flow at Tittesworth Reservoir (including Solomon's Hollow) to be reduced from a minimum of 14.8 Ml/d to a minimum of 6.8 Ml/d. Authorise abstracting 8 Ml/d from the Abbey Green borehole, operating outside the borehole's abstraction licence limits, to discharge into the River Churnet 1.8 km downstream of Tittesworth Reservoir. Remove the requirement for a total minimum discharge of 19.32 Ml/d to be released from a combination of Tittesworth Reservoir (including Solomon's Hollow) and Deep Hayes.		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Water	**To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.**	The impact on water quality is expected to be negligible for all reaches except for the reach between the Abbey Green borehole discharge point and the confluence with Eldon Brook. This is a precautionary impact assessment on the basis that the available water quality data for Abbey Green borehole suggests that DO, temp, pH and nitrate may be affected downstream of the discharge point.	Small scale/Uncertain/Temporary	**Minor Adverse**
	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability	The scheme proposes an increased abstraction from the Abbey Green borehole to augment the flows in the River Churnet in the absence of the reservoir compensation flows, something which is outside the normal operating licence for the borehole (the borehole is currently licenced for water supply but not for compensation release). The impacts of this on groundwater resources is not specified in the EARs and as such is uncertain	Small scale/Uncertain/Temporary	**Uncertain**
	To ensure reliable, resilient and sustainable water resources for people, economy and the environment. **To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources.**	Drought permit will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. Drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	Medium scale/Certain/Temporary	**Minor Beneficial**
	To reduce and manage fluvial and surface water flood risk.	The drought permit will have no adverse effects on flood risk.	n/a	n/a
Soil, geology and land use	**To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to land use management (rural and urban).**	There would be no land use changes associated with this drought permit.	n/a	n/a
Air and Climate	**To reduce air pollutant and greenhouse gas emissions.**	No operational impacts on air quality are anticipated. The drought permit involves modifications to abstractions and hands-off flows only. No changes to energy use, and therefore greenhouse gas emissions, are envisaged.	Medium scale/Certain/Temporary	**Negligible**
	To adapt and improve resilience to the threats of climate change.	Drought permits are a key component of Severn Trent Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	Medium scale/Certain/Temporary	**Minor Beneficial**
Archaeology and Cultural Heritage	**To protect and enhance heritage assets, their setting and the historic environment.**	The drought permit has been assessed as having negligible impact upon known archaeology and cultural heritage assets.	Small scale/Certain/Temporary	**Negligible**
Landscape and Visual Amenity	**To protect and enhance the quality of, and improve access to, designated and undesignated landscapes, Green Belt and the built environment.**	No designated landscapes in the immediate vicinity. The drought permit will enable Tittesworth Reservoir to refill its water levels over the winter months. However the 1.8km stretch downstream between the reservoir and the Abbey Green borehole discharge point (near Leek) will experience lower water levels.	Small scale/Certain/Temporary	**Mixed**

DP Scheme: River Leam at Eathorpe and River Avon at Stareton – River Avon		Reduce the hands-off flow in the River Avon at Stareton of 45 Ml/d to 35 Ml/d exclusively to allow transfer of additional water from the River Avon at Brownsover into Draycote reservoir		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Biodiversity, flora and fauna	**To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity.**	The scheme has been assessed for its potential to have impacts on the European designated sites of the Severn Estuary/ Môr Hafren SAC (UK0013030), Severn Estuary SPA (UK9015022) and Severn Estuary Ramsar (UK11081). The HRA concluded that there was uncertainty as to whether or not the scheme would have any LSE on the sites when implemented in combination with other drought plan options and recommended that further investigation was needed and that appropriate assessment may be required. However when assessed alone, impacts upon the qualifying habitats identified for the European site are unlikely to be significant as the Environmental Assessment Report identifies that the reduction in flow equates to approximately 0.1% of the Q95 flow in the Severn Estuary. The two catchments combined only contribute 1.4% of the total flow in the estuary. The impacts of the drought permit have the potential to influence anadromous /diadromous fish species present, however the Environmental Assessment Report has identified the presence of a number of significant barriers. Furthermore, European eel were the only migratory species found in the surveyed reaches, albeit in low numbers. Therefore, the impacts of the drought permit are not considered likely to have a significant effect on the qualifying species for the European site.	Medium scale/Uncertain/Temporary	**Negligible**
	To strengthen the connections between people and nature and realise the value of biodiversity.	None	n/a	n/a
Population and Human Health	**To improve human health and well-being of the area, improve access to recreation and the environment, and reduce inequalities.**	The drought permit will help to maintain essential public water supplies during drought conditions and therefore help maintain public health. The scheme will not affect access to open spaces but may have a minor impact on informal recreation activities. The option has the potential to promote the value of water and its sustainable use, through increased customer awareness of the drought.	Medium scale/Certain/Temporary	**Mixed**
Material assets and resource use	**To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill**	No impacts on material assets are anticipated. Option involves modifications to abstraction and prescribed flows only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure. The option has the potential to promote an increased efficient use of water through greater awareness of the drought.	Medium scale/Certain/Temporary	**Negligible**
Water	**To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.**	Water quality impact risk is expected to be low, reduced flows downstream of Stareton may cause some minor adverse impacts on water quality from which the river could recover quickly.	Medium scale/Certain/Temporary	**Minor Adverse**
	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability	The drought permit will reduce the hands-off flow at Stareton from 45 Ml/d recorded at the flow gauge to 35 Ml/d allowing for the additional water to be transferred to Draycote Reservoir. The drought permit will not impact on the moderate to high flow regime in the receiving water courses.	Medium scale/Certain/Temporary	**Mixed**

DP Scheme: River Leam at Eathorpe and River Avon at Stareton – River Avon		Reduce the hands-off flow in the River Avon at Stareton of 45 Ml/d to 35 Ml/d exclusively to allow transfer of additional water from the River Avon at Brownsover into Draycote reservoir		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
	To ensure reliable, resilient and sustainable water resources for people, economy and the environment. **To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources.**	Drought permit will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. Drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	Medium scale/Certain/Temporary	**Minor Beneficial**
	To reduce and manage fluvial and surface water flood risk.	The drought permit will have no adverse effects on flood risk.	n/a	n/a
Soil, geology and land use	**To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to land use management (rural and urban).**	There would be no land use changes associated with this drought permit. The impact on fluvial geomorphology due to lower flows is assessed as minor adverse (potential for increased erosion of river banks and sediment deposition) when compared with the situation under natural drought conditions.	Medium scale/Uncertain/Temporary	**Negligible**
Air and Climate	**To reduce air pollutant and greenhouse gas emissions.**	No operational impacts on air quality are anticipated. The drought permit involves modifications to abstractions and hands-off flows only. No changes to energy use, and therefore greenhouse gas emissions, are envisaged.	Medium scale/Certain/Temporary	**Negligible**
	To adapt and improve resilience to the threats of climate change.	Drought permits are a key component of Severn Trent Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	Medium scale/Certain/Temporary	**Minor Beneficial**
Archaeology and Cultural Heritage	**To protect and enhance heritage assets, their setting and the historic environment.**	The drought permit has been assessed as having negligible impact upon known archaeology and cultural heritage assets.	Medium scale/Certain/Temporary	**Negligible**
Landscape and Visual Amenity	**To protect and enhance the quality of, and improve access to, designated and undesignated landscapes, Green Belt and the built environment.**	No designated landscapes in the immediate vicinity. The drought permit will enable Draycote Reservoir to maintain higher water levels for longer, but downstream from the abstraction point at Stareton will experience lower water levels.	Medium scale/Certain/Temporary	**Mixed**

DP Scheme: River Leam at Leamington and the River Avon at Stareton – River Leam		Authorise abstraction at Eathorpe on the River Leam to Draycote Reservoir at any time of year when the lower storage condition at Draycote Reservoir would normally prohibit such abstraction. Relax the prescribed flow in the River Leam at Princes Drive Weir in Leamington from 18 Ml/d to 12 Ml/d		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Effect significance**
Biodiversity, flora and fauna	**To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity.**	The scheme has been assessed for its potential to have impacts on the European designated sites of the Severn Estuary/ Môr Hafren SAC (UK0013030), Severn Estuary SPA (UK9015022) and Severn Estuary Ramsar (UK11081). The HRA concluded that there was uncertainty as to whether or not the scheme would have any LSE on the sites when implemented alone or in combination with other drought plan options and recommended that further investigation was needed and that appropriate assessment may be required. When assessed alone, impacts upon the qualifying habitats identified for the European site are unlikely to be significant as the Environmental Assessment Report identifies that the reduction in flow equates to approximately 0.1% of the Q95 flow in the Severn Estuary. The two catchments combined only contribute 1.4% of the total flow in the estuary. Although the impacts of the drought permit may have the potential to influence anadromous /diadromous fish species present, the Environmental Assessment Report for this drought permit has identified the presence of a number of significant barriers to migration. Furthermore, European eel were the only migratory species found in the surveyed reaches downstream of the abstraction point, albeit in low numbers. However, the impacts of the drought permit are not considered likely to have a significant effect on the migratory fish species designated under the SAC and Ramsar site. Overall, potential direct short term impacts would be limited to restricted access to the wetted river by water vole (if and where they occur) and restricted access to food resources should minimum flows coincide with breeding season for female otter. However, it is considered that these effects would be very temporary during minimum flows with an overall reduction in impact magnitude across mean flows. It is anticipated that the drought permit would have no measurable effect upon remaining species or habitats.	Medium scale/Uncertain/Temporary	**Minor Adverse**
	To strengthen the connections between people and nature and realise the value of biodiversity.	None	n/a	n/a
Population and Human Health	**To improve human health and well-being of the area, improve access to recreation and the environment, and reduce inequalities.**	The drought permit will help to maintain essential public water supplies during drought conditions and therefore help maintain public health. The scheme will not affect access to open spaces but may have an impact on informal recreation activities. Peak recreational use will coincide with hot, dry periods thus the impact on minimum summer flows is potentially significant. The option has the potential to promote the value of water and its sustainable use, through increased customer awareness of the drought.	Medium scale/Certain/Temporary	**Mixed**
Material assets and resource use	**To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill**	No impacts on material assets are anticipated. Option involves modifications to abstraction and prescribed flows only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure. The option has the potential to promote an increased efficient use of water through greater awareness of the drought.	Medium scale/Certain/Temporary	**Negligible**

DP Scheme: River Leam at Leamington and the River Avon at Stareton – River Leam		Authorise abstraction at Eathorpe on the River Leam to Draycote Reservoir at any time of year when the lower storage condition at Draycote Reservoir would normally prohibit such abstraction. Relax the prescribed flow in the River Leam at Princes Drive Weir in Leamington from 18 Ml/d to 12 Ml/d		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Effect significance**
Water	**To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.**	Water quality impact risk is expected to be low, reduced flows downstream of the abstraction point at Eathorpe may cause some minor adverse impacts on the water quality from which the river could recover quickly.	Medium scale/Certain/Temporary	**Minor Adverse**
	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability	The drought permit will allow abstraction of water from the River Leam at Eathorpe at any time of the year when this would normally be prohibited by the lower storage condition of the Draycote Reservoir to help maintain essential water supplies in the reservoir. The permit will also allow prescribed flows at Princes Drive weir on the River Leam to be lowered to 12 Ml/d from 18 Ml/d. The drought permit will not impact on the moderate to high flow regime in the receiving water courses.	Medium scale/Certain/Temporary	**Mixed**
	To ensure reliable, resilient and sustainable water resources for people, economy and the environment. **To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources.**	Drought permit will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. Drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	Medium scale/Certain/Temporary	**Minor Beneficial**
	To reduce and manage fluvial and surface water flood risk.	The drought permit will have no adverse effects on flood risk.	n/a	n/a
Soil, geology and land use	**To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to land use management (rural and urban).**	There would be no land use changes associated with this drought permit. The impact on fluvial geomorphology due to lower flows is assessed as minor adverse (potential for increased erosion of river banks and sediment deposition) when compared with the situation under natural drought conditions.	Medium scale/Uncertain/Temporary	**Negligible**
Air and Climate	**To reduce air pollutant and greenhouse gas emissions.**	No operational impacts on air quality are anticipated. The drought permit involves modifications to abstractions and prescribed flows only. No changes to energy use, and therefore greenhouse gas emissions, are envisaged.	Medium scale/Certain/Temporary	**Negligible**
	To adapt and improve resilience to the threats of climate change.	Drought permits are a key component of Severn Trent Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	Medium scale/Certain/Temporary	**Minor Beneficial**
Archaeology and Cultural Heritage	**To protect and enhance heritage assets, their setting and the historic environment.**	The drought permit has been assessed as having negligible impact upon known archaeology and cultural heritage assets.	Medium scale/Certain/Temporary	**Negligible**
Landscape and Visual Amenity	**To protect and enhance the quality of, and improve access to, designated and undesignated landscapes, Green Belt and the built environment.**	No designated landscapes in the immediate vicinity. The drought permit will enable Draycote Reservoir to maintain higher water levels for longer, but downstream from the abstraction point at Eathorpe will experience lower water levels.	Medium scale/Certain/Temporary	**Mixed**

DP Scheme: River Severn at Trimpley		The proposed drought permit will suspend the daily abstraction restriction under maximum regulation and the constraint limiting abstraction over the first 100 days of river regulation (special conditions 2b and 2c of the Trimpley licence). This will enable abstraction up to 180 Ml/d at Trimpley (200 Ml/d with the 20 Ml/d transferred from Hampton Loade), the joint licence constraints at Trimpley and Hampton Loade. The daily maximum of 272 Ml/d (max regulation) will revert to 400 Ml/d, and the seasonal limits equivalent to 242 Ml/d (licence No 110 and 163) and 272 Ml/d (licence No.110, 163 and 584) will be removed. If the period of the drought permit extends beyond 100 days of river regulation the situation will be reviewed with the EA in the light of likely future demand on Trimpley and current storage in Clywedog and the Elan Valley reservoirs. In the event that the EA has already applied for a drought order on the River Severn then we would need to apply for a drought order at Trimpley. This drought order will reverse the 5% reduction on abstraction that would have been introduced by the EA's River Severn drought order and potentially make the other temporary changes that we would apply for in a drought permit application		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Biodiversity, flora and fauna	**To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity.**	The scheme was assessed for its potential impacts upon the European Designated sites of the Severn Estuary/ Môr Hafren SAC (UK0013030), Severn Estuary SPA (UK9015022) and Severn Estuary Ramsar (UK11081). The HRA concluded that further details on the scheme are required to fully determine impacts. It is anticipated that the scheme alone will not have likely significant effects on the European sites; however in-combination with other drought options and water resource plans, including those of other water companies, there is potential for significant impact. There are a number of SSSIs, LNRs and NNRs within proximity of the scheme, some of which are water dependent and could be adversely impacted upon by the drought permit.	Medium scale/Uncertain/Temporary	**Minor Adverse**
	To strengthen the connections between people and nature and realise the value of biodiversity.	None	n/a	n/a
Population and Human Health	**To improve human health and well-being of the area, improve access to recreation and the environment, and reduce inequalities.**	The drought permit will help to maintain essential public water supplies during drought conditions and therefore help maintain public health. The scheme will not affect access to open spaces but may have an impact on informal recreation activities. Peak recreational use will coincide with hot, dry periods thus the impact on minimum summer flows is potentially significant. The option has the potential to promote the value of water and its sustainable use, through increased customer awareness of the drought.	Large scale/Certain/Temporary	**Mixed**
Material assets and resource use	**To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill**	No impacts on material assets are anticipated. Option involves modifications to abstraction and prescribed flows only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure. The option has the potential to promote an increased efficient use of water through greater awareness of the drought.	Medium scale/Certain/Temporary	**Negligible**
Water	**To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.**	Permitting the abstractions at Trimpley during a drought period could have a significant and major adverse impact on the water quality downstream of the abstraction point.	Large scale/Uncertain/Temporary	**Major Adverse**
	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability	The drought permit will suspend the abstraction restrictions at Trimpley under maximum river regulation and the first 100 days of overall regulation. This will allow Trimpley reservoir to maintain higher water levels for longer, but could have a major impact on the flow regime downstream of the abstraction point. The drought permit will not impact upon the moderate to high flow regime in the receiving water course.	Large scale/Uncertain/Temporary	**Major Adverse**

DP Scheme: River Severn at Trimpley		The proposed drought permit will suspend the daily abstraction restriction under maximum regulation and the constraint limiting abstraction over the first 100 days of river regulation (special conditions 2b and 2c of the Trimpley licence). This will enable abstraction up to 180 Ml/d at Trimpley (200 Ml/d with the 20 Ml/d transferred from Hampton Loade), the joint licence constraints at Trimpley and Hampton Loade. The daily maximum of 272 Ml/d (max regulation) will revert to 400 Ml/d, and the seasonal limits equivalent to 242 Ml/d (licence No 110 and 163) and 272 Ml/d (licence No.110, 163 and 584) will be removed. If the period of the drought permit extends beyond 100 days of river regulation the situation will be reviewed with the EA in the light of likely future demand on Trimpley and current storage in Clywedog and the Elan Valley reservoirs. In the event that the EA has already applied for a drought order on the River Severn then we would need to apply for a drought order at Trimpley. This drought order will reverse the 5% reduction on abstraction that would have been introduced by the EA's River Severn drought order and potentially make the other temporary changes that we would apply for in a drought permit application		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
	To ensure reliable, resilient and sustainable water resources for people, economy and the environment. **To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources.**	Drought permit will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. Drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	Large scale/Certain/Temporary	**Major Beneficial**
	To reduce and manage fluvial and surface water flood risk.	The drought permit will have no adverse effects on flood risk.	n/a	n/a
Soil, geology and land use	**To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to land use management (rural and urban).**	There would be no land use changes associated with this drought permit.	n/a	n/a
Air and Climate	**To reduce air pollutant and greenhouse gas emissions.**	No operational impacts on air quality are anticipated. The drought permit involves modifications to abstractions and prescribed flows only. No changes to energy use, and therefore greenhouse gas emissions, are envisaged.	Small scale/Certain/Temporary	**Negligible**
	To adapt and improve resilience to the threats of climate change.	Drought permits are a key component of Severn Trent Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	Medium scale/Certain/Temporary	**Minor Beneficial**
Archaeology and Cultural Heritage	**To protect and enhance heritage assets, their setting and the historic environment.**	There are a number of heritage assets within proximity of the scheme, including bridges and other river features, however none of these are thought to be water dependent and as such the drought permit is anticipated to have negligible impact upon known archaeology and cultural heritage assets.	Small scale/Certain/Temporary	**Negligible**
Landscape and Visual Amenity	**To protect and enhance the quality of, and improve access to, designated and undesignated landscapes, Green Belt and the built environment.**	There are no designated landscapes in the immediate vicinity. The drought permit will enable Trimpley Reservoir to maintain higher water levels for longer, but downstream from the abstraction point will experience lower water levels.	Medium scale/Certain/Temporary	**Mixed**

DP Scheme: River Wye at Wyelands		Authorise the abstraction of up to 45.5 Ml/d at Wyelands when the flow in the River Wye at Redbrook is less than 1209 Ml/d and Elan Reservoirs storage is below the Elan Storage Licence Rule Curve.		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
Biodiversity, flora and fauna	**To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity.**	The HRA concluded that further details on the scheme are required to fully determine impacts on the River Wye SAC/SSSI, and that considering the existing situation with the Review of Consents identifying likely significant effects under normal conditions, the potential for the proposed drought permit to have adverse effects on the European site, alone or in-combination with other drought options and water resource plans, including those of other water companies, cannot be ruled out. The HRA concluded that although details on the drought permit are not fully known, it is considered unlikely that the impacts of the drought permit would have a likely significant effect on the bat species for which the Wye Valley Woodlands SAC and Wye Valley & Forest of Dean Bat Sites SAC are designated. As the hydrological impact of the drought permit is uncertain the impact on Park Wood SSSI, Upper Wye Gorge SSSI, Brooks Head Grove SSSI, Great Doward SSSI, Fiddlers Elbow SSSI/NNR, Newton Court Stable Block SSSI, Harper's Grove-Lord's Grove SSSI, Livox Wood SSSI, Wye Valley Lesser Horseshoe Bat Site SSSI, Lady Park Wood NNR, Coppett Hill LNR is uncertain. The impact of the drought permit operation on the Elan Valley designated sites (Elenydd-Mallaen SPA, Ellenydd SAC/SSSI, Elan Valley Woodlands SAC, River Wye SAC, Coedydd Glannau a Cwm Coael SSSI, Caban Lakeside Woodlands SSSI, Troed-Rhiw-Drain Meadows SSSI, Coed yr Aiit-Goch SSSI, Caeau Cnwch a Ty'n-y-Graig SSSI) is uncertain but is unlikely to be significant above the impacts due to natural drought.	Large scale/Uncertain/Temporary	**Major Adverse**
	To strengthen the connections between people and nature and realise the value of biodiversity.	None	n/a	n/a
Population and Human Health	**To improve human health and well-being of the area, improve access to recreation and the environment, and reduce inequalities.**	The drought permit will help to maintain essential public water supplies during drought conditions and therefore help maintain public health. The scheme will not affect access to open spaces but may have a minor impact on informal recreation activities. The option has the potential to promote the value of water and its sustainable use, through increased customer awareness of the drought.	Medium scale/Certain/Temporary	**Mixed**
Material assets and resource use	**To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill**	No impacts on material assets are anticipated. Option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure. The option has the potential to promote an increased efficient use of water through greater awareness of the drought.	Medium scale/Certain/Temporary	**Negligible**
Water	**To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.**	The operation of the drought permit may have an adverse impact on water quality in the River Wye (conf Walford Bk to Bigsweir B, GB109055037111) due to a reduced dilution of discharges downstream from Lydbrook STW, Goodrich STW, Monmouth STW and Newland STW. Further details of the drought permit are required to improve the accuracy of the assessment.	Large scale/Uncertain/Temporary	**Uncertain**
	To ensure appropriate and sustainable management of abstractions, protecting flow regime range and variability	The drought permit will allow abstraction from the River Wye at Wylands at times of low flow when abstraction would normally be curtained by the Elan Storage Licence Rule Curve and/or flow at Redbrook. The operation of the permit could have a major impact on the flow regime downstream of the abstraction point. Further details are required to inform the assessment. The drought permit will not impact upon the moderate to high flow regime in the downstream water course.	Large scale/Uncertain/Temporary	**Uncertain**

DP Scheme: River Wye at Wyelands		Authorise the abstraction of up to 45.5 Ml/d at Wyelands when the flow in the River Wye at Redbrook is less than 1209 Ml/d and Elan Reservoirs storage is below the Elan Storage Licence Rule Curve.		
Topic	**Objective**	**Potential residual effect (taking account of mitigation and assessing sensitivity/value of receptors)**	**Magnitude** (scale/ certainty/ permanence - as applicable)	**Residual Effect significance**
	To ensure reliable, resilient and sustainable water resources for people, economy and the environment. **To increase awareness of water sustainability, its efficient use and the ecosystem functions which rely on water resources.**	Drought permit will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. Drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	Large scale/Certain/Temporary	**Major Beneficial**
	To reduce and manage fluvial and surface water flood risk.	The drought permit will have no adverse effects on flood risk.	n/a	n/a
Soil, geology and land use	**To protect and enhance geology, the quality and quantity of soils and promote a catchment-wide approach to land use management (rural and urban).**	There would be no land use changes associated with this drought permit. The impact on fluvial geomorphology due to lower flows is uncertain but assessed as negligible (potential for increased erosion of river banks and sediment deposition) when compared with the situation under natural drought conditions.	Small scale/Uncertain/Temporary	**Negligible**
Air and Climate	**To reduce air pollutant and greenhouse gas emissions.**	No operational impacts on air quality are anticipated. The drought permit involves modifications to abstractions and prescribed flows only. No changes to energy use, and therefore greenhouse gas emissions, are envisaged.	Large scale/Certain/Temporary	**Negligible**
	To adapt and improve resilience to the threats of climate change.	Drought permits are a key component of Severn Trent Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	Large scale/Certain/Temporary	**Minor Beneficial**
Archaeology and Cultural Heritage	**To protect and enhance heritage assets, their setting and the historic environment.**	The operation of the drought permit is unlikely to impact on heritage assets, including Merlins Cave, Great Doward SAM and multiple listed buildings, over and above the impacts resulting from natural drought conditions.	Small scale/Certain/Temporary	**Negligible**
Landscape and Visual Amenity	**To protect and enhance the quality of, and improve access to, designated and undesignated landscapes, Green Belt and the built environment.**	The River Wye forms an integral part of the Wye Valley AONB and it is possible the aesthetic quality of the site may be adversely impacted by lower flows in the River Wye resulting from the operation of the drought permit. The operation of the drought permit will result in lower levels in the Elan Valley reservoirs which adversely impact on the quality of the landscape in the vicinity of the reservoirs.	Large scale/Uncertain/Temporary	**Minor Adverse**

Legend

Significance of Effect	
+++	Major Beneficial
++	Moderate Beneficial
+	Minor Beneficial
N	Negligible
-	Minor Adverse
--	Moderate Adverse
---	Major Adverse
U	Uncertain
M	Mixed beneficial/adverse impact