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THAMES WATER DROUGHT PLAN 2027

Strategic Environmental Assessment (SEA) Environmental Report

Report for: Thames Water

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Contact:
Ricardo Clean Energy and Environmental Solutions
Gemini Building, Fermi Avenue, Harwell, Oxon, OX11 0QR, UK

T: +44 (0)1235 753 487
E: kirsten.palmer@ricardo.com

Author:
Katie Moran, Ingrid Kintu, Charlotte McEnhill

Approved by:
Kirsten Palmer

Signed

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1	30/03/26	Addressed comments from Thames Water. Final for Draft DP27 submission	**Katie Moran**

NON-TECHNICAL SUMMARY

BACKGROUND AND PURPOSE OF THE SEA

Water companies in England and Wales are required to prepare and maintain statutory Drought Plans under the Water Industry Act 1991, as amended by the Water Act 2003 and in accordance with the Drought Plan Regulations 2005, the Drought Plan Direction 2025, and Environment Agency guidelines. The purpose of Thames Water's Draft Drought Plan (DP) 2027 is to demonstrate what actions will be taken to protect public water supplies during a drought and how they intend to minimise any resulting environmental impacts.

This Strategic Environmental Assessment (SEA) has been undertaken on Thames Water's Draft DP 2027. The DP provides a comprehensive statement of the actions Thames Water will consider implementing during drought conditions to safeguard essential water supplies to customers and minimise environmental impact. It is consistent with Thames Water's Water Resources Management Plan (WRMP), the objective of which is to set the strategic plan for the delivery of water resources to balance supply and demand over a 25-year period.

DPs 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 and each combination of these factors may require a different response in terms of measures. In the context of drought planning, individual drought options are taken to constitute alternatives. Thames Water's Draft DP comprises a total of 49 drought options (five demand-side options, nine supply side options, 27 standard drought permit/order options and 6 *in extremis* supply side options).

SEA of certain 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 provide high level and strategic protection of the environment by incorporating environmental considerations into the preparation of plans and policy. The nature of Thames Water's Draft DP means that SEA is not a mandatory requirement in this case. However, the company has undertaken SEA to assist in the identification of the likely significant environmental effects of its drought options and to determine how any adverse impacts might be avoided or mitigated.

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

Thames Water has also undertaken a Habitats Regulations Assessment (HRA) of its Final DP, which has been carried out in parallel with the SEA and is reported separately in the HRA Screening Report. The HRA screening process identifies whether each drought option in the DP (either alone, in combination or with other plans or projects) is likely to have significant effects on the integrity of European designated sites, i.e. sites of international conservation importance. The findings of both the SEA and HRA have fed into the revision of the DP in an iterative process.

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; and landscape and visual amenity; and inter-relationships.

The overall findings of the SEA describe the extent to which objectives for each topic are met by each of the drought options. It should be noted that where detailed Environmental Assessment Reports (EARs) have been produced for the supply side drought permit options, these have been used to inform the SEA for these options.

The outputs of the assessment are a completed appraisal framework table for each drought option, and a colour coded summary matrix (ranging from major beneficial impacts to major adverse impacts) which 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 likely significant effects of each of the drought options in combination with each other and in combination with the implementation of other relevant plans and programmes.

The area under consideration for the SEA reflects the spatial scope of the Drought Plan, which necessarily extends beyond the boundaries of the Thames Water supply area to include the whole of the Thames River basin (reflecting the natural catchment area for Thames Water's existing water supplies).

FINDINGS OF THE ASSESSMENTS

Demand side options

Overall, demand side measures serve to reduce pressure on water resources within each water resource zone by reducing customer demand for water, and therefore reducing the abstraction at source. This will in turn contribute to reducing the amount of energy needed for water abstraction, treatment and distribution. Demand side measures typically provide moderate beneficial effects such as protecting and enhancing health and well-being through maintaining water supplies for essential use, and promoting efficient and sustainable use of water. While customers may be asked to use less water during implementation of demand side measures, the measures will help to ensure that some water is available to support population health throughout drought situations. Adverse impacts have been identified with respect to some businesses (e.g., landscaping, horticulture, recreation and tourism) where restrictions of water use are involved, particularly for ordinary or emergency drought orders.

Supply side options

Most of the nine supply side options in Thames Water's DP are groundwater sources which require little, if any, construction works to operate. Overall, these options are expected to have minor to major beneficial impacts associated with benefits to security of public water supply. The LON_0013, LON_0020 and KEN_0006 have the greatest beneficial effects, as they would deliver large volumes of water during drought events.

The LON_0020, reduction in lowest residual flow on the Lower Thames Control Diagram at LON_0027 from 300Ml/d to 200Ml/d and KEN_0006 options have some moderate adverse effects. This is due to waste streams and air emissions from the LON_0020, deterioration in water quality in the River Thames, and reductions in freshwater flows into the LON_0011 and Upper Tideway, and associated water quality and biodiversity effects, due to reducing lowest residual flows at LON_0027. In addition, the KEN_0006 may have moderate adverse effects on other abstractors.

Drought permit/order options

Many of the drought permit/order options involve extensions of existing licences and do not involve any construction works. Reductions in groundwater and surface water levels also have the potential for adverse impacts on the SEA topics of Biodiversity, Population and Human Health, Archaeology and Cultural Heritage, and Landscape and Visual Amenity. Beneficial effects are also identified for some options mainly associated with the maintenance of water supplies. The assessment showed that for Water Resource Zones (WRZs) with a number of drought options available, some options would be considered more sustainable than others within the same WRZ. Therefore, in the event of a drought, the findings of the SEA can be reviewed and can contribute towards an informed assessment of the options proposed for implementation at that time. They will contribute to how Thames Water will use them in accordance with the DP.

Cumulative Impacts

The cumulative impacts assessment identified the potential for adverse impacts if two or more drought options were to be implemented at the same time, either intra- or inter-water resource zone. For the majority of combinations, impacts are considered unlikely, but in some cases, impacts have been identified where, for example, both options draw on the same water resource (e.g. same groundwater catchment or same river). Due to the uncertainty of timing of implementation of drought options, a strategic assessment of each drought option against all other drought options has been undertaken. In the event of a drought, the findings of the SEA can be reviewed and a more detailed cumulative assessment will be undertaken of the specific options proposed for implementation at that time, based on the findings of the specific environmental assessments.

Assessment of Thames Water's Draft DP with other plans and programmes, including Environment Agency Area Drought Plan, other water company DPs and WRMPs, identified potential cumulative impacts. For example, potential cumulative impacts have been identified between the LON_0021 option and the SES Drought Plan. It is worth noting that other water companies' DPs are in the process of being updated along the same timescales and the assessment has been based on the information available at this time. Effects will be reviewed and re-assessed as necessary following the Draft DP submission as well as in an evolving drought situation, in order to enable a better understanding of potential impacts associated with simultaneous operation of drought permits.

Mitigation and Monitoring

As part of the environmental assessment of each drought option, for those receptors with a potential moderate or major impact from implementation of the associated drought permit, site specific monitoring has been recommended, together with triggers to inform practical implementation of mitigation measures. These are described in the EARs and Environmental Monitoring Plans (EMPs).

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. Suitable and practicable mitigation measures will be implemented at appropriate times to minimise impacts, as documented in the relevant EAR and EMP.

During implementation of one or more drought options, appropriate monitoring will be undertaken to track any potential adverse environmental effects. Additional mitigation measures will be put in place if monitoring indicates that further management of adverse impacts is required. Prior to implementation of any DP activities, Thames Water will review the specific requirements for environmental monitoring in consultation with the Environment Agency and Natural England.

CONSULTATION

A SEA Scoping Report was issued in April 2025, 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 have been considered in preparing this report.

The Draft DP and the SEA Environmental Report will be issued for public consultation. Once comments have been received through this consultation, Thames Water may make changes to the Draft DP, and these changes will also be assessed using the approach to SEA set out in this report before the final DP is issued. When the DP is implemented during an actual drought event, Thames Water will monitor its effects on the environment, helping to ensure that the potential impacts identified in the SEA are considered in practice.

The Consultation period for this SEA Environmental Report will run concurrently with consultation on Thames Water's draft DP. Comments should be sent by email:

consultations@thameswater.co.uk

Or by post :

Steve Tuck

Thames Water

Clearwater Court (Ground East)

Vastern Road

Reading

RG1 8DB

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Appendices

1. INTRODUCTION

1.1 BACKGROUND AND PURPOSE OF REPORT

Thames Water Utilities Limited (Thames Water) is preparing its Draft Statutory Drought Plan (DP) 2027 and has undertaken Strategic Environmental Assessment (SEA) of its DP. A Habitats Regulations Assessment (HRA) screening has been undertaken in parallel.

SEA is a statutory requirement for plans or programmes which could have significant environmental implications and helps to identify where there are potential impacts and how any negative impacts might be mitigated. More information about SEA, and the rationale for applying it to the DP, is provided in **Section 1.2** below.

This Environmental Report is the second output of the SEA. On 6 May 2025, a Scoping Report was issued for consultation[1] which summarised the baseline and framework that would be used for the assessment. Issues raised by consultees have been considered in preparing this Environmental Report (see **Section 1.9**).

The SEA Environmental Report accompanies Thames Water's submission of their draft DP to Defra. **Section 1.9.3** provides details of how to comment on this Environmental Report.

The Environmental Report presents the baseline information that sets the context for the assessment (**Section 3** and **Appendix B**) and provides details of the methods employed in undertaking the assessment (**Section 4**). The potential impacts of the various DP options are outlined in **Section 5**, with the impacts of the combinations of options included in the DP set out in **Section 6**. Information regarding mitigation and monitoring is provided in **Section 7**.

The SEA Environmental Report accompanies Thames Water's submission of their draft DP to Defra.

1.2 APPLICATION OF SEA TO DROUGHT PLANNING

1.2.1 Overview of Strategic Environmental Assessment

SEA is a statutory requirement under the Environmental Assessment of Plans and Programmes Regulations 2004 (referred to as the SEA Regulations)[2].

The objective of SEA is 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 Regulations require the preparation of an Environmental Report that identifies, describes and evaluates the likely significant environmental effects of implementing the plan or programme, as well as reasonable alternatives, taking into account the plan or programme's objectives and geographical scope.

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 the timing, prioritisation 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**.

The range of issues to be included in an SEA is set out in the SEA Regulations, and includes biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage

[1] Ricardo (2025) Strategic Environmental Assessment of Thames Water's Draft Drought Plan 2027: Scoping Report. Prepared by Ricardo for Thames Water Services Ltd. May 2025.

[2] The Environmental Assessment of Plans and Programmes Regulations 2004 (Statutory Instrument 2004 No. 1633) apply to any plan or programme which relates solely or in part to England.

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

(including archaeological heritage), and landscape. As such, the full range of environmental and social effects which are likely to arise from implementation of the DP27 are considered.

As identified above, the Government produced SEA guidance[3], which sets out the stages of the SEA process. This, together with guidance for undertaking SEA of DPs, which has been produced on behalf of United Kingdom Water Industry Research (UKWIR)[4], has been used to inform the methodology for the SEA. These documents provide the recommended best practice guidance for preparing SEAs of DPs.

An updated DP Guideline and supplementary environmental guidance was published by the Environment Agency in March 2025 following consultation[5]. This has informed Thames Water's DP27 and preparation of the SEA.

1.2.2 Applying Strategic Environmental Assessment to Drought Planning

DPs encompass a suite of actions that will only be implemented in response to drought conditions. Due to the unpredictable nature of drought events, the actual implementation and impact of these actions over the lifetime of the plan is subject to considerable uncertainty. A drought may not occur at all during the plan period. If it does, its characteristics, such as severity, seasonality, geographic extent, duration, and the influence of other abstractors within the catchment, can vary significantly. As a result, each drought event may require a bespoke combination of actions, depending on its specific context.

It is impossible to predict in advance which and how many of the actions will be required, and in which order of priority, to respond to each particular drought event. Therefore, the SEA of DPs cannot provide a certain prediction of an overall environmental effect of adopting the plan, as its implementation is uncertain. However, for some resource zones with fewer drought actions, it may be easier to predict which actions would be implemented in a drought scenario or it may be known that certain combinations would always be deployed simultaneously. The Environmental Report discusses these where relevant.

Instead of attempting to assess a number of potential scenarios, the SEA of Thames Water's DP27 includes a cumulative effects assessment in order to ensure that actions are not mutually exclusive, or that combinations would not cause significant adverse impacts.

The SEA of Thames Water's DP27 is also focussed on the reactive and transient nature of the event when a DP is operational, while maintaining the strategic approach of an SEA. For this, it is important to consider the relationship between the Water Resource Management Plans (WRMP) and the DP. The Environmental Report, baseline review and establishment of the SEA framework attempt to separate the key issues and assessment approaches relevant to the DP27 from those more applicable to the WRMP. The assessment of individual options concentrates on effects resulting from the implementation of drought management actions rather than the 'natural' impacts of drought.

1.2.3 Requirement for SEA and HRA of Thames Water's Drought Plan

Undertaking a SEA of a DP helps guide decision-making both in the preparation of the DP27 and during DP operation. For example, the SEA identifies the potential effects across a broad range of environmental topics established during the scoping phase. As every drought is different in terms of severity, location, duration and hence impact, the output of the SEA for each option will help guide option selection specific to the characteristics of any potential drought. The SEA also includes cumulative assessments to ensure that options are not mutually exclusive, or that combinations would not cause significant adverse effects. This, therefore, informs decision making at DP development stage and ensures important strategic decisions are made early on in the process.

The SEA Scoping Report, which was consulted on between April and June 2025 contained a description of the screening process. It was concluded that SEA is required, considering a precautionary approach and uncertainties associated with whether it sets a framework for future development consent, and the unknown outcome of the Habitats Regulations Assessment (HRA) screening at that time. The HRA has since been undertaken and is available in a separate report.

[4] UKWIR (2021) Environmental Assessment Guidance for Water Resources Management Plans and Drought Plans (WR/02/S). Prepared by Ricardo Energy & Environment.

[5] Environment Agency (2025) Water Company Drought Plan Guideline, March 2025

1.3 THAMES WATER'S SUPPLY SYSTEM AND DROUGHT PLANNING

1.3.1 Introduction

Thames Water is the UK's largest water and wastewater services provider, supplying 2.6 billion litres of drinking water each day and treating 4.7 billion litres of wastewater. The company manages public water supply and wastewater treatment across a vast region, serving 15.5 million people, which accounts for approximately 27% of the UK population[6]. In a dry year, Thames Water supplies around 2,000Ml/d in the London WRZ, and 600Ml/d across other WRZs[7]. Thames Water sources its water supply from both surface water and groundwater. Some 70% of Thames Water's water supply is derived from surface sources (largely from the upper and lower Thames and the River Lee) and the remainder is derived from groundwater abstraction[8]. However, as for most of South East England, during periods of prolonged low rainfall leading to a serious drought, water supply is largely sustained by groundwater abstraction, groundwater derived baseflow within rivers and available water stored in reservoirs.

Thames Water sets out how it will maintain planned levels of service in its Water Resources Management Plan (WRMP). The latest WRMP was published in 2024 (as WRMP24) and sets out a "twin-track" approach of demand management measures together with timely development of new water sources to ensure a positive supply/demand balance during prolonged dry weather[9]. The 2024 WRMP sets out the actions Thames Water will take to maintain its customer levels of service for water supply reliability, in particular planning for a Temporary Use Ban and/or a non-essential use ban as well as measures to increase the amount of water that is available.

The Thames Water DP complements the WRMP24 and is focused on the actions that Thames Water will take during drought conditions when there are increased risks of temporary water use restrictions being required along with implementing temporary measures to augment water supply availability in order to maintain essential water supplies to all customers. Thames Water's WRMP24 was approved by the Secretary of State in October 2024. Where available, Thames Water WRMP24 proposals have been considered in the SEA of the Thames Water DP (in combination and cumulative assessment).

For water resource and drought planning purposes, the Thames Water supply area is divided into six water resources zones (WRZs) reflecting the different characteristics of the supply areas and associated risks associated with meeting demand within the Thames Water area (see **Figure 1-1**).

The largest of these zones is the London WRZ, which covers the Greater London area, followed by Swindon and Oxfordshire (SWOX). The water resources for London are largely based on abstraction from the River Thames (80%), which is stored in reservoirs, and the remainder from underground sources (aquifers) via boreholes. SWOX is supplied mainly from groundwater (60%), supported by river abstraction and a reservoir, sited near Oxford. The other zones to the west of London are Kennet Valley (this includes Reading and Newbury); Henley; Slough, Wycombe and Aylesbury (SWA) and Guildford. These latter four zones are largely reliant on groundwater abstraction although there are abstractions directly from local rivers, notably the River Kennet in Reading and the River Wey near Guildford. The Thames Water DP describes these WRZs from a drought perspective in the following sections.

1.3.2 London and SWOX Water Resource Zones

The water resources for London and SWOX WRZs are derived from a combination of river abstraction, raw water reservoir storage and groundwater sources. For both zones, the critical element in the system is the level of reservoir storage, which in turn is dependent upon river flow, and during drought, this is primarily made up of the baseflow from the catchment's major aquifers and treated effluent discharges.

[6] Thames Water Utilities Limited (2024) Water Resources Management Plan 2024 Available at https://www.thameswater.co.uk/about-us/regulation/water-resources [Accessed February 2025]

[7] Thames Water Utilities Limited (2024) Draft Water Resources Management Plan 2024 Available at https://www.thameswater.co.uk/about-us/regulation/water-resources [Accessed February 2025]

[8] Thames Water Utilities Limited (2024) Water resources situation - January 2025 Available at https://www.thameswater.co.uk/about-us/performance/reservoir-levels-and-rainfall-figures [Accessed February 2025]

[9] Thames Water Utilities Limited (2024) Water Resources Management Plan 2024 - Section 1 – Introduction and Background Available at https://www.thameswater.co.uk/about-us/regulation/water-resources [Accessed February 2025)

Through the Environment Agency's Restoring Sustainable Abstraction (RSA) programme, Thames Water has implemented measures to reduce abstraction from environmentally sensitive sources in the SWOX and London WRZs and further reductions are planned as part of Environmental Destination.

1.3.3 Kennet Valley and Guildford Water Resource Zones

Although groundwater provides a major contribution in these zones, the critical drought elements are the surface water sources on the River Kennet and River Wey for Kennet Valley and Guildford zones, respectively. Consequently, the protocol for these zones consists of a trigger mechanism for implementing drought measures based on river flows receding to critical low levels.

Through the Environment Agency's RSA programme, Thames Water has implemented measures to reduce abstraction from environmentally sensitive sources in the Kennet Valley and Guildford WRZs with further reductions planned. Thames Water will continue to investigate any requirements for potential sustainability reductions in the supply area.

1.3.4 SWA and Henley Water Resource Zones

These two zones are entirely supplied by groundwater sources, which historically have remained robust during drought. That is to say, the critical point at which source outputs decline below their deployable output has never been reached. The approach in these zones, therefore, is to track groundwater levels in key regional observation boreholes as well as the linked performance of selected groundwater sources in relation to their deployable output. Stonor Park observation borehole has been chosen for tracking groundwater levels in the Chilterns and forms the basis for defining drought management guide levels for both the SWA and Henley zones.

Through the Environment Agency's RSA programme, Thames Water has implemented measures to reduce abstraction from environmentally sensitive sources in the SWA WRZ with further reductions planned. Thames Water will continue to investigate any requirement for potential sustainability reductions in the supply area.

1.3.5 Area under construction for the SEA

The area under consideration for the SEA reflects the spatial scope of the DP which necessarily extends beyond the boundaries of the Thames Water supply area (**Figure 1-1**) to include the whole of the Thames river basin (reflecting the natural catchment area for Thames Water's existing water supplies).

There is potential for effects to extend beyond the boundary of the Draft DP 2027. For example, when considering hydrological connectivity or functionally linked habitat and the potential effects of an individual option. Additionally, where options could include transfers and potential water trading between companies, appropriate consideration will be given to the effects outside of the Thames river basin. This will also extend to the assessment of cumulative effects.

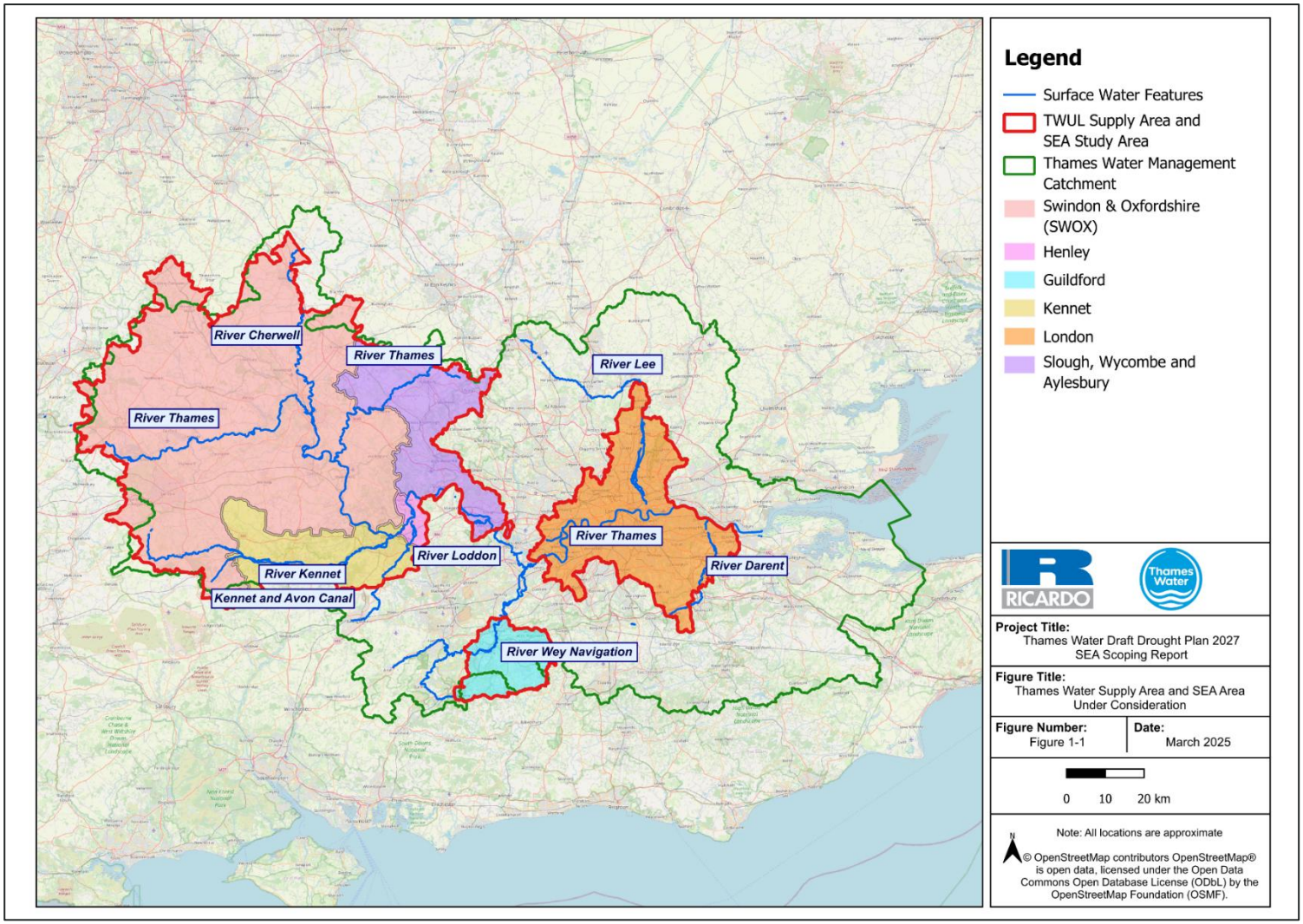

Figure 1-1: Thames Water Supply Area

1.4 THAMES WATER DROUGHT PLANNING PROCESS

1.4.1 Overview and timetable

Water companies in England and Wales are required to prepare and maintain Statutory DPs under Sections 39B and 39C of the Water Industry Act 1991, as amended by the Water Act 2003 and subsequently Water Act 2014, which set out the sort of operational steps a company will take before, during and after a drought.

The Water Industry Act 1991 defines a DP as '*a plan for how the water undertaker will continue, during a period of drought, to discharge its duties to supply adequate quantities of wholesome water, with as little recourse as reasonably possible to drought orders or drought permits*'.

On 1 October 2010, Section 76 of the Water Industry Act 1991 was amended by the commencement of Section 36 of the Flood and Water Management Act 2010. The Water Use (Temporary Bans) Order 2010 also commenced on 1 October 2010 and provides definitions and clarifications on these activities.

The Drought Plan Direction is published by the Secretary of State and sets out the requirements for drought planning, including the schedule for when water companies must publish their DP, as directed by Defra. A revised DP must be published at least every 5 years from the date the previous DP was published. The Direction has been updated for DP 2027 and requires Thames Water to submit their draft DP by 31 March 2026[10,11].

The Environment Agency have reviewed and updated the Drought Plan Guideline and a final version was provided to water companies in March 2025 (DPG2025[12]). The DPG2025 also contains additional guidance including the Environment Agency's 'Environmental Assessment for Water Company Drought Plans - supplementary guidance[13]'.

Thames Water's current Final DP 2022 covers the period 2022 - 2027. Thames Water is currently updating its DP 2027 and the period encompassed by the Final DP 2027 will be 2027 - 2032. The next revision of the DP would be published in 2032.

1.4.2 Review of Existing Abstraction Licences

Permissions to abstract water, granted through licences issued by the Environment Agency and held and operated by Thames Water, have been subject to a 'Review of Consents' in accordance with Regulation 63 of the Habitats Regulations. This Review of Consents was undertaken by the Environment Agency and includes screening to determine likely significant effect and Appropriate Assessment where likely significant effects are identified, to either affirm an abstraction licence or recommend action to amend the licence conditions. This is in order to ensure that the integrity of the European site is not at risk from the impacts of abstraction. The conclusion of the HRA Screening and the SEA for each drought option should be reviewed at the time of any future application for drought powers to ensure they remain valid.

Only those drought options which are relevant to the period encompassed by the DP are considered in the SEA and HRA process. To this end, environmental effects of the Draft DP 2027 options are considered within the context of the current licence operating conditions. Potential new sources (which Thames Water may bring on line in the future), new drought options, or revisions to existing options which are only envisaged to become operational post 2032 have, therefore, been excluded from the SEA and HRA. The same approach has also been taken with respect to cumulative plans, projects and programmes, in that only those that are likely to be effective in the period to 2032 will be considered in the SEA. Where changes to a licence with an associated drought option have been identified as part of the Review of Consents, this will be referenced in the SEA Environmental Report.

1.4.3 Thames Water's Drought Options

In the Final DP 2022, Thames Water sets out the triggers for each WRZ that would be used to help determine at which point drought measures would be implemented. . The triggers are in line with Thames Water's four

[10] Defra (2025) The Drought Plan (England) Direction 2025, July 2025

[11] Defra (2025) Government expectations for water company drought plans, July 2025

[12] Environment Agency (2025) Water Company Drought Plan Guideline, Final, March 2025.

[13] Environment Agency (2025) Water Company Drought Plan Guideline, Environmental assessment for water company drought planning supplementary guidance, March 2025.

customer Levels of Service for water supply reliability which set out the average frequency of imposing different types of water use restrictions on customers during drought conditions. These Levels of Service, together with the maintenance of a supply-demand balance in each WRZ, form the guiding principles of the Thames Water supply strategy, as set out in the WRMP and DP.

Drought management actions may be applied either company wide, by WRZ or to target a specific geographic area depending on the nature of the drought event prevailing at that time. The Draft DP 2027 contains a range of potential drought management options available to Thames Water, for example using strategic schemes, implementation of drought permits/orders and temporary use bans. As specified in the Drought Plan Guideline[5] individual drought permits/orders are valid for up to six months. However, a more severe drought may require implementation of options beyond six months. Thames Water provided a methodology for assessing the environmental impacts of severe droughts and a high-level summary of the environmental impacts of Thames Water's drought actions in droughts worse than record ('severe droughts') in 2018[14]. The assessment undertaken to inform the severe drought methodology and the high-level summary was referred to, but not updated, for DP 2022. The same approach will be applied to DP 2027.

There are two broad categories of drought options: demand side options and supply side options. These are described below.

1.4.3.1 Demand side options

Demand side options are designed to reduce the demand for water, and the options available to Thames Water are consistent across all resource zones (see **Table 1-1**). Demand side options will be included in both the SEA and HRA screening. **Table 1-1** sets out the demand-side options that may be considered and the corresponding level of service: it should be noted that the planned measures in the Thames Water DP and WRMP 2024 are designed to ensure that the Level 4 Emergency Drought Order option shown in the table will not be required in a repeat of the worst drought on record.

Table 1-1: Demand Side Options (All Water Resource Zones)

Measure*	Description of Measure	Company Level of Service
Media /water efficiency campaign	Wide-scale media activity and advertising to encourage voluntary reduction in water usage	1
Leakage reduction	Increased leakage activity / Network pressure management	Not applicable
Temporary use ban	Temporary use ban	2
Drought Order to ban Non-Essential Use	Application to Defra to grant Non Essential Use Bans, as part of DD11 Ordinary Drought Order application	3
Emergency Drought Order	Application to Defra to grant an Emergency Drought Order to authorise water supply via temporary rota cuts or standpipes	4

*. During a drought, leakage reduction and water efficiency can, to some extent, be enhanced.

1.4.3.2 Supply side options

Thames Water categorise the full range of supply side measures into the following:

- Drought sourcing strategy
- Strategic drought water resource schemes
- Bulk supplies
- Drought permits / orders

[14] Thames Water Utilities Limited (2018) Environmental Assessment of Severe Droughts – Summary Report. *Prepared by Ricardo Energy & Environment*. August 2018

- Recommissioning of disused sources
- Severe drought measures

Supply side measures are measures available to Thames Water to introduce during the course of a drought to increase the amount of water available for supply. Supply side drought options that do not require drought permits/orders are listed in **Table 1-2**.

Table 1-2: Supply side drought options (all within London WRZ)

Option	Description	Trigger Level
LON_0013	The scheme is licensed for 275Ml/d peak and 150Ml/d average.	Drought Event Level 1
LON_0020	There is an Operating Agreement governing use of the scheme. An agreement is in place with the EA whereby LON_0020 will be in supply no later than 50 days after the drought trigger is breached.	Drought Event Level 1 and naturalised LON_0027 flows below 3000Ml/d for 10 days
LON_0002	LON_0002 is a water treatment works (WTW) using a number of the LON_0013 boreholes. It is not restricted to use under the LON_0013 Operating Agreement but can be used under any conditions, although its use is primarily to meet peak demands and drought demands. Licensed for up to 18Ml/d but would be 15.1Ml/d reducing to 10.6Ml/d in a prolonged drought	Drought Event Level 1 and TTF reduces to 600 or 400 Ml/d curve or Level 1 LTCD.
Reduction in lowest residual flow on the Lower Thames Control Diagram at LON_0027 from 300Ml/d to 200Ml/d	100Ml/d - increased abstraction from the River Thames, reducing residual flow over LON_0027.	Agreed between the Environment Agency and Thames Water during potentially severe drought.
Earlier reduction in residual flow at LON_0027 on the Lower Thames Control Diagram	The gain in abstraction capability would be equal to the difference in reduction agreed at each stage on the Lower Thames Control Diagram, for the period when that flow band is operable.	Agreed between the Environment Agency and Thames Water during potentially severe drought.
LON_0005	LON_0005 comprises a number of groundwater abstraction locations along the route of the Channel Tunnel Rail Link which can be used to meet demand for water in London as well as contributing to the management of groundwater level rises. This source provides a water resource benefit of up to 7.39 Ml/d and this contributes to the provision of 19.9 Ml/d when operated in conjunction with LON_0017 and LON_0015.	Drought Event Level 1 and naturalised LON_0027 flows below 3000Ml/d for 10 days
LON_0017	LON_0017 is a groundwater source in East London which is run at low level of baseload output in order to keep groundwater levels suppressed to protect Stratford International Station. The option available during a drought is to increase the output from 5Ml/d to 8Ml/d in aggregate with Edmeston Close.	Drought Event Level 1 and naturalised LON_0027 flows below 3000Ml/d for 10 days
LON_0015	LON_0015 is a groundwater source in East London which abstracts from the Chalk aquifer. The licence allows for the abstraction of 4.5Ml/d average, 4.5Ml/d peak to meet peak demands and demand during drought conditions.	Drought Event Level 1 and naturalised LON_0027 flows below 3000Ml/d for 10 days

Option	Description	Trigger Level
KEN_0006	Untreated groundwater is discharged into the Lambourn, a tributary of Kennet, Enbourne, Pang and Loddon eventually flowing into the River Thames to increase the flow to London reservoir abstraction points. A benefit of some 126Ml/d reducing to 67Ml/d in a prolonged drought is provided by the scheme.	Level 2 on the Lower Thames Control Diagram

1.4.3.3 Severe Drought SupplySide Options

In extremis supply side management actions, also referred to as 'more before level 4' actions, may be considered during a drought to mitigate the need for Level 4 measures such as rota-cuts in an emergency situation. Thames Water is currently completing further consideration of such options to provide supply benefits to reduce the risk of reaching Level 4. Where sufficient information is available, these options have been included in the assessment. Further work to define the feasibility and scope of these options is ongoing. In extremis options supply side options are presented in **Table 1-3**. In extremis options that would require a drought permit are provided in Section 1.4.3.5.

Table 1-3 *In extremis* 'more before 4' supply side options

Option	Description
Reduction of bulk supplies	The potential for reduction in provision of bulk supplies beyond what is already agreed with neighbouring companies would be explored and measures would be implemented if feasible and agreed with neighbouring companies. Any changes to bulk supplies in very severe scenarios would only be made in full agreement with the other water companies involved. In a severe drought it is important to retain the flexibility of allowing further discussions with other water companies to take into account the specific conditions of that drought and to use any operational flexibility that may be available at the time to help maintain customer supplies.
Alternative Sources of supply for non-potable use	Potential options to use dewatering discharges as a replacement for non-potable use would be explored. For example, quarry or excavation dewatering discharges could potentially be used to provide irrigation water for high value recreational uses where restrictions on use would have significant economic impact. We would also explore the setting up of non-potable water refill points for businesses on a community scale e.g. for councils for parks watering, this could potentially be provided through the re-use of treated STW effluent.

1.4.3.4 Supply Side Drought Permit / Order Options

Drought permits and orders are drought management actions that, if granted, can allow more flexibility to manage water resources and the effects of drought on public water supply and the environment. Guidance has been prepared by the Environment Agency[15]: which highlights the main differences between drought permits and orders. One of the key differences is that drought permits are granted by the Environment Agency, with drought orders being granted by the Secretary of State. Potential drought permit/order sites are identified in **Table 1-4**.

Table 1-4: Supply side drought permit/order options

Water Source	Potential Drought Permits/Orders
London Water Resource Zone	
LON_0019 1	0 - 6.64Ml/d - relax the annual average licence rate so that for the 6 months of the drought order, 8Ml/d could be abstracted each day (1,470Ml over 6 months).
LON_0019 2	10.64Ml/d -relax the annual average licence rate and increase the peak licence rate so that for the 6 months of the drought order, 12Ml/d could be abstracted each day (sequential to LON_0019 1).

[15] Environment Agency (2025) Drought permits and drought orders, March 2025

Water Source	Potential Drought Permits/Orders
LON_0011 1	100 – 200Ml/d – depending on agreement with the Environment Agency and water availability.
LON_0011 2	0-200 Ml/d - depending on agreement with the Environment Agency and water availability. This option would be sequential to LON_0011 1.
LON_0003	2.8Ml/d - increase in abstraction beyond existing licence limit.
LON_0022	6.0Ml/d - increase in abstraction beyond existing licence limit.
Increase in M2 annual licence	Increase the annual maximum abstraction permitted under the M2 licence by up to 5%. Abstractions would still be restricted when flows are medium to low (as per normal operations).
LON_0021	0 – 7Ml/d - increase in abstraction beyond existing licence limit (average rate per year of 7.6Ml/d).
Swindon Oxford Water Resource Zone	
SWOX_0002 1	6.3Ml/d - re-establish abstraction from existing boreholes (revoked through sustainability reductions).
SWOX_0002 2	17Ml/d – an additional abstraction of up to 10.7Ml/d above the additional 6.3Ml/d from SWOX_0002 1.
SWOX_0009	5Ml/d increase in average licence limit.
SWOX_0010 1	6Ml/d - the drought permit would allow abstraction from the Great Oolite boreholes at a rate of 6 Ml/d
SWOX_0010 2	11.37Ml/d - the drought permit would allow abstraction from the Great Oolite boreholes at a rate of 11.37Ml/d when preceding flow (mean 5 days before) in the River Coln at SWOX_0003 is less than 68Ml/d (i.e. as per the terms of the now revoked 'summer' licence).
SWOX_0006	10 - 30Ml/d - additional abstraction direct from the river in addition to that allowed by the existing licence.
SWOX_0001 1	Option would be to increase from the constrained level of 6 Ml/d peak and average to unconstrained abstraction of 13.1Ml/d peak and average. i.e. to go from 6 to 13.1Ml/d a gain of 7.1Ml/d.
SWOX_0001 2	Option would be to increase from 13.1Ml/d to 20Ml/d peak and average i.e. an increase of 6.9Ml/d.
SWOX_0007	3.5Ml/d - continuation of abstraction from boreholes beyond licence conditions.
SWOX_0005	4.5Ml/d - resume historical abstraction to previous licence limit.
SWOX_0011	Abstract 3.5Ml/d from the SWOX_0011 boreholes used in the now revoked licence.
Kennet Water Resource Zone	
KEN_0003	12 – 30Ml/d - bringing emergency abstraction licence online with output limited by groundwater resource available
KEN_0004	7Ml/d – removes flow constraint and allows the full amount of the KEN_0004 licence to be abstracted.
KEN_0005	2.8 - 4.1Ml/d - increase in peak abstraction of existing licence from 8.2Ml/d to 12.3Ml/d.
KEN_0002	Variable, up to 20Ml/d – manipulation of the KEN_0007 structure at extreme low flows (<173Ml/d gauged at Theale) to allow abstraction from River Kennet at expense of flows to Holy Brook.
Guildford Water Resource Zone	
GUI_0001	6.8Ml/d - extension of abstraction when flow constraints on the Law Brook is in force.
GUI_0006	5Ml/d - extension of existing surface water abstraction from the River Wey.
SWA Water Resource Zone	
SWA_0005	Increase from revised licence of 9.5 Ml/d up to old deployable output of 16.8 Ml/d (i.e. an option providing 7.3 Ml/d)
Henley Water Resource Zone	
HEN_0001 / HEN_0002	5.6Ml/d – aggregate abstraction from multiple sources.

In addition to the options in **Table 1-4**, we have included five new drought permit options to increase our resilience to future droughts. These include the GUI_0004/GUI_0002/GUI_0003 option, which involves the disaggregation of the existing abstraction licence which would allow an increase in peak yield by up to 9Ml/d. The LON_0018 option involves the installation of additional treatment which would allow up to an additional 4Ml/d and would maintain the peak licence for the duration of the drought permit. The LON_0001 option involves the removal of the flow constraint, allowing abstraction to continue at 36Ml/d. The LON_0008 option comprises of a new abstraction into LON_0023.

EARs for these permit options are currently being developed and will be available to accompany our revised Drought Plan following consultation on the draft Drought Plan. They will not be included in the March 2026 draft submission as they have only recently been identified as requiring an EAR. A full list of Drought Permit options can be found in Appendix C of the main Drought Plan.

1.4.3.5 In Extremis Supply Side Drought Permit/Order Options

In extremis supply side management actions, also referred to as 'more before level 4' actions, may be considered during a drought to mitigate the need for Level 4 measures such as rota-cuts in an emergency situation. Thames Water is currently completing further consideration of such options to provide supply benefits to reduce the risk of reaching Level 4. Where sufficient information is available, these options have been included in the assessment. Further work to define the feasibility and scope of these options is ongoing. In extremis options are presented in **Table 1-5**.

Table 1-5 *In extremis* 'more before 4' supply side options

Option	Description
SWOX_0004	The drought permit would require re-commissioning of existing boreholes. The abstraction licence at SWOX_0004 was revoked in 2007 and volumes transferred to SWOX_0007. The revoked SWOX_0004 abstraction consisted of 4 boreholes located 600m south of the village, approximately 700m away from the Mill Brook source and 600m away from Blewbury Pond. 5Ml/d- recommissioning of abstraction from boreholes (revoked 2007). Minor construction works would be required to bring this option online as a drought permit source. Operation would involve construction of a temporary water treatment plant; however, pipework would be within the existing site boundary. No significant construction impacts on the environment are anticipated.
KEN_0001	KEN_0001 (1) abstraction boreholes are located in Berkshire Downs Chalk WFD groundwater body. The option would see re-established abstraction from existing boreholes (previously revoked due to high nitrate concentrations) of up to 5Ml/day. There is currently NO treatment capability and therefore a temporary water treatment facility may be required.
LON_0008	In a very severe drought we would consider increasing abstraction from our boreholes at LON_0008 (by 6.64Ml/d). This would require the use of a Drought Permit and would also require additional treatment capacity to be installed on site.
SWOX_0012	Abstract 4 Ml/d from existing boreholes located 1 km away from the boreholes used in Thames Water's now revoked licence
SWOX_0003	Up to 5Ml/d - Increase abstraction at the current boreholes by up to 5Ml/d. The arrangement for river flow augmentation would continue.

1.4.3.6 Supporting Information

Drought options included in the SEA and HRA screening have been documented by Thames Water in the Draft DP 2027.

It is noted that some drought options may have different environmental effects depending on the season of implementation (for example a summer vs a winter drought). As drought measures can theoretically be required and implemented at any time of year, overall impacts have been assessed where possible on a worst-case basis.

Environmental assessment studies of Thames Water's drought permit / order sites have been carried out and information from these studies has been used to inform the SEA and HRA.

1.5 DROUGHT PERMIT/ ORDER ENVIRONMENTAL STUDIES

Environmental Assessment Reports (EARs) have been prepared for the drought permits / order sites identified in **Table 1-4**, to support Thames Water's DP.

The aim of these drought contingency studies is to produce environmental reports that have been agreed with the Environment Agency and Natural England 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, but not limited to the following; Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar features as well as any Sites of Special Scientific Interest (SSSI) interest features or species/habitats of principal importance for the conservation of biodiversity in England (identified in the Natural Environment and Rural Communities (NERC) Act 2006 Section 41).

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 EAR to be prepared in support of specific drought permit/order applications, should the need arise. Information from the assessments has been used to inform the SEA and HRA.

The drought events of 2022 and 2025 led to the preparation of multiple drought permit applications, each requiring regular and ongoing consultation with the Environment Agency. The experience gained through these processes has directly shaped subsequent revisions to the EARs, resulting in more streamlined, clearly structured documents. The updated EARs now incorporate more robust impact assessments, alongside strengthened monitoring and mitigation packages that are better aligned with regulatory expectations and operational needs.

1.6 RELATIONSHIP TO OTHER PLANS AND PROGRAMMES

The only significant linkage between the DP and other plans or programmes is with Thames Waters Water Resources Management Plan (WRMP).

The DP and the WRMP have distinct, separate, but linked purposes. The DP is a short term, tactical plan for managing Thames Water's actions during a drought. The DP covers the monitoring and measurements of water resource variables to determine the onset of drought, the triggers for undertaking actions during a drought, the communications that would be undertaken in a drought, the demand and supply side actions undertaken in a drought, and the management structure put in place during a drought. The DP also sets out how droughts of differing severity would be managed, and the impact they would have on the provision of water supply. The DP is revised every four to five years and is based on the existing assets available to Thames Water. It does not provide the framework for development of new water supply options.

In contrast, the WRMP sets out the plans for meeting water resources needs over at least 25 years, but also includes consideration of requirements up to 2075. It also takes into account factors such as growth, climate change and loss of resources to protect the environment. The WRMP is the plan for future investment in demand management programmes and new water resource options and so sets the framework for development. The WRMP is also revised every five years to update the plans for future demand management and resource requirements.

The key links between the two plans are that the DP sets the tactical response to drought episodes, using the water resource assets that are specified in the WRMP as the base resource available at the time the plan is produced and for the following four to five years. The Drought Plan sets out in detail the methods used to implement the measures that are assumed to be available in the WRMP (e.g. temporary restrictions on the use of water) and it is therefore critical that the DP and WRMP are consistent in the assumptions made relating to what resources are available and what measures are implemented at what stages in a drought. The DP also addresses the challenge that would be faced in the event of droughts of greater severity than have been experienced in the historic record, and so indicates the situations in which pressure on resources would be greatest. This is used to inform the WRMP, outlining where measures are needed to improve the resilience to potentially more severe droughts in the future. The DP can be updated before five years have elapsed if necessary (see **Section 1.4.1**), if there was a material change.

In line with updates to Water Resources Planning Guidelines (WRPG) in order to permit the use of drought options as WRMP options (through the Water Resources South East (WRSE) regional planning process) Thames Water needed to engage with Environment Agency to identify those drought permits that could be

considered as sources to rely upon in a drought in the shorter term and which have a minimal environmental impact. As a result, a small number of drought permit options were included as supply-side options in the Final WRMP24.

1.7 STAGES OF SEA PROCESS

Table 1-6 is an extract from the Government's SEA guidance, the Practical Guide[3] that sets out the main stages of the SEA process and the purpose of each task within the process. This Environmental Report represents Stage C: Task C1 of the SEA process. Specific guidance on the application of the SEA process to DPs is provided in a best practice publication by UKWIR (2021)[4].

Table 1-6: SEA Stages and Tasks

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	

SEA Stages and Tasks	Purpose
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.

1.8 STRUCTURE OF ENVIRONMENTAL REPORT

This SEA Environmental Report presents the findings of Tasks B1 to C1 set out in **Table 1-6** and provides the consultation bodies with an opportunity to express their opinions on the findings of the assessment.

This Section (**Section 1)** of the report describes the overall purpose and process of the SEA and background to Thames Water's water supply system and drought planning process. It also gives details of consultation on the SEA. The remainder of the report is structured as follows:

Section 2 – Policy Context, provides a review of other policies, plans and programmes which influence the DP27.

Section 3 – Environmental Baseline Review (set out in full in Appendix B), sets out the key environmental issues Thames Water has considered in the SEA, drawing on information on the current state of the environment within Thames Water's water supply area. The review covers all SEA topics, which were deemed relevant and scoped into the assessment during the scoping stage.

Section 4 – Methodology, provides details of the methods employed in undertaking the assessment including the cumulative effects assessment methodology.

Section 5 – Assessment of Drought Options, presents the potential impacts of the various DP27 options against the SEA framework.

Section 6 – Cumulative Effects Assessment, discusses the potential in-combination impacts of drought options (intra-zone and inter-zone), demand management options and other plans and projects in the region.

Section 7 – Mitigation and Monitoring, discusses measures envisaged to prevent, reduce and offset any significant adverse effects of implementing the DP27 and monitoring the environmental effects to show whether they are as predicted, to help identify any adverse impacts and trigger deployment of further mitigation measures.

1.9 CONSULTATION

1.9.1 Overview

Two opportunities are available for consultation bodies to be formally involved during the SEA process: during the scoping process; and at the environmental reporting stage. These are discussed below.

Following publication of the Final DP, Thames Water will prepare a SEA Post-Adoption Statement setting out how the SEA and any views expressed by the consultation bodies or the public have influenced the DP.

1.9.2 Consultation on the Scoping Report

Consultation bodies were invited to express their views on the Scoping Report and the scope of the SEA proposed in accordance with SEA Regulation 12(5).

The Scoping Report was issued on 6 May 2025 to the Environment Agency, Historic England and Natural England. The consultation period ran until June 2025. The Statutory consultees were invited to comment on the report and the proposed scope of the SEA. The issues raised and responses to comments are presented in **Appendix C**.

1.9.3 Consultation on the Environmental Report

This Environmental Report has been produced in accordance with the approach agreed by Thames Water and taking into consideration the responses received from consultation bodies in response to the Scoping consultation. It provides assessments of the likely significant effects of the drought options considered and selected by Thames Water.

The 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 Thames Water's Draft DP 2027.

The consultation period for this SEA Environmental Report will run concurrently with consultation on Thames Water's draft DP. Comments should be sent by email:

Consultations@thameswater.co.uk

1.10 QUALITY ASSURANCE

ODPM Guidance on SEA contains a Quality Assurance checklist to help ensure that the requirements of the SEA Directive are met. The checklist is reproduced in **Appendix E**, **Table E-1**, indicating where this Environmental Report meets each requirement.

2. POLICY CONTEXT

2.1 INTRODUCTION

The SEA Regulations require 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 contents and main objectives of the plan or programme, and of its relationship with other relevant 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 a European site (within the meaning of regulation 8 of the Conservation of Habitats and Species Regulations 2017)]*
- *"The environmental protection objectives, established at international, Community or [national] 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 Regulations, a review of relevant policies, plans and programmes is presented in **Section 2.2**. Baseline environmental information is presented in **Appendix B**. A summary of key issues has been prepared and is presented in **Section 3.4**

2.2 REVIEW OF POLICIES, PLANS AND PROGRAMMES

2.2.1 Introduction

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 Thames Water's DP might be affected by other plans, to identify other environmental protection objectives which the DP should consider and to help to identify the objectives for the SEA.

The plans and programmes were identified from the wide range that has been produced at an international, national, regional and local level. If the plan or programme did not have 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, then it was not included.

International, national, regional and local policies, plans, programmes and strategies reviewed are listed in **Table 2-1**, with the findings of the review provided in **Appendix A**. The information from this review has been used to direct the presentation of baseline information on the current environmental and social characteristics of Thames Water's water supply area (**Appendix B**), and to develop proposed objectives for the SEA (**Section 4.2**).

Table 2-1: Key policy messages derived from the review of Plans, Policies and Programmes

SEA Topic	Key Messages	Plans, Policies and Programmes
Biodiversity, flora and fauna	Conservation and enhancement of the natural environment and of biodiversity, particularly internationally and nationally designated sites, whilst taking into account future climate change.	**International:** Convention on Biological Diversity (2022) Kunming-Montreal Global Biodiversity Framework (GBF) Council of Europe (1979) The Convention on the Conservation of European Wildlife and Natural Habitats (The Bern Convention) Council of Europe (1979) The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) European Commission, Birds Directive (2009/147/EC) HM Government (2008) Planning Act 2008 Ramsar Convention (1971), The Convention on Wetlands of International Importance United Nations, Convention on Biological Diversity (CBD) (1992) **National:** Centre for Environment Fisheries and Aquaculture Science and Natural Resources Wales (2023) Assessment of Salmon Stocks and Fisheries in England and Wales Defra (2010), Making Space for Nature: A Review of England's Wildlife Sites and Ecological Network Defra (2010) Eel Management Plans for the United Kingdom: Overview for England and Wales Defra (2023) Environmental Improvement Plan 2023 Defra (2022) Natural Capital and Ecosystem Assessment (NCEA) Defra (2023) Complying with the Biodiversity Duty (Environment Act 2021) Defra and Environment Agency (2025) Water Company Drought Plan Guidelines, 2025 Defra (2023) Environmental Improvement Plan 2023 Defra (2011) Natural Environment White Paper Defra (2023) Statutory Biodiversity Metric: Tools and Guides Defra (2015) The government's response to the Natural Capital Committee's third State of Natural Capital report Defra (2020) Enabling a Natural Capital Approach (ENCA) Defra (2023) The Great Britain Invasive Non-Native Species Strategy: 2023 to 2030
	Promote a catchment-wide approach to water management to ensure better protection of biodiversity.	
	To achieve favourable condition for priority habitats and species, including UK NERC habitats and species.	
	Avoidance of activities likely to cause irreversible damage to nature conservation and natural heritage.	
	Support 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.	
	Protection, conservation and enhancement of natural capital. Ecosystem services from natural capital contributes to the economy and therefore should be protected and, where possible, enhanced.	
	To seek opportunities for biodiversity net gain from infrastructure development.	

SEA Topic	Key Messages	Plans, Policies and Programmes
	Avoidance of activities likely to increase the risk of spread of Invasive Non-Native Species (INNS).	Defra (2023) Environmental Improvement Plan 2023 Defra (2025) Environmental Improvement Plan annual progress report: April 2024 to March 2025 Environment Agency (undated) Hydroecology: Integration for modern regulation Environment Agency (2022) River Basin Management Plans: 2022 Update Four Countries' Biodiversity Group (4CBG) (2024) UK Biodiversity Framework HM Government (1990) Town and Country Planning Act 1990 HM Government (1975) Salmon and Freshwater Fisheries Act 1975 HM Government (1981) Wildlife and Countryside Act 1981 HM Government (1990) Environmental Protection Act HM Government (1994) The Conservation (Natural Habitats, &c.) Regulations 1994 HM Government (2000) Countryside and Rights of Way (CROW) Act 2000 HM Government (2006) Natural Environment and Rural Communities Act 2006 HM Government (2009) The Aquatic Animal Health (England and Wales) Regulations 2009 HM Government (2009) The Eel (England and Wales) Regulations 2009 HM Government (2009) Water Resources Act 1991 (Amendment) (England and Wales) Regulations 2009 HM Government (2009) Marine and Coastal Access Act 2009 HM Government (2010) The Marine Strategy Regulations 2010 HM Government (2011) UK Marine Policy Statement HM Government (2017) The Conservation of Habitats and Species Regulations 2017 HM Government (2017) The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 HM Government (2018) A Green Future: Our 25 year Plan to Improve the Environment HM Government (2019) the Invasive Alien species (Enforcement and Permitting) Order 2019 HM Government (2021) Environment Act 2021 HM Government (2025) Draft Planning and Infrastructure Bill Department for Levelling Up, Housing and Communities (DLUHC) (2024) National Planning Policy Framework (NPPF)

SEA Topic	Key Messages	Plans, Policies and Programmes
		Natural England (2016) A narrative for conserving freshwater and wetland habitats in England Natural England (2025) 'Natural England's Strategy: Recovering Nature for Growth, Health and Security Natural England and the Environment Agency (2014) Protected Species and Development: Advice for Local Planning Authorities UKTAG on the WFD e.g. Phase 3 Review of Environmental Standards Environment Agency, Natural England, Department for Environment, Food and Rural Affairs, and Office of Water Services (2022) Water Industry Strategic Environmental Requirements (WISER) **Regional/Local:** Defra (2023) Complying with the Biodiversity Duty (Environment Act 2021) Local Nature Recovery Strategies (various) National Landscape/AONB Management Plans (various) National Park Authorities Management Plans (various) Defra, Welsh Government, Scottish Government, Department of Agriculture, Environment and Rural Affairs (Northern Ireland), coordinated by the Join Nature Conservation Committee (NJCC) (2025) UK National Biodiversity Strategy and Action Plan (NBSAP) Defra (2024) Implementation of UK Eel Management Plans (2020-2023) The Countryside and Rights of Way (CROW) Act 2000 Environment Agency CAMS (various) Environment Agency and Defra (2022) Thames River Basin Management Plan Environment Agency and Defra, (2022) Thames River Basin District River Basin Management Environment Agency (2022) Thames River Basin District Flood Risk Management Plan 2021 - 2027 Environment Agency and Defra, (2022) Severn River Basin District River Basin Management Plan 2022 Environment Agency and Defra, (2022) Humber River Basin District: River Basin Management Plan 2022 The South East England Biodiversity Forum (2009) South East Biodiversity Strategy Greater London Authority (GLA) (2018) London Environment Strategy Mayor of London City of London Biodiversity Action Plan (2021-2026)

SEA Topic	Key Messages	Plans, Policies and Programmes
		Local Planning Authority (various) Land Use Plans Local Wildlife Trusts (various) Local Catchment Partnership Plans (various) Mayor of London (2018) London Environment Strategy Natural England National Character Area (NCA) Profiles Oxfordshire Local Enterprise Partnership (OxLEP), now operating as Enterprise Oxfordshire (2025) Oxfordshire Strategic Economic Plan 2023-2033 OxCam Local Natural Capital Plan Environment Agency (2009) Water Resources Strategy – A Regional Action Plan for Thames Region Environment Agency Area Drought Plans (various) Marine Management Organisation (2016)South East Marine Plan
Population and human health	Water resources play an important role in supporting the health and recreational needs of local communities. Effective water resource management can create opportunities for regeneration, tourism and the wider economy. The issue of water supply is becoming a development constraint in some areas, which is recognised as an issue in the National Planning Policy Framework (NPPF). To ensure all communities have a clean, safe and attractive environment in which people can take pride.	**International:** European Commission (1999) Landfill of Waste Directive (99/31/EC) United Nations Economic Commission for Europe (1998), Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (The Aarhus Convention) United Nations (2002) The World Summit on Sustainable Development. United Nations (2015) The 2030 Agenda for Sustainable Development World Commission on Environment and Development (1987) Our Common Future (The Brundtland Report)

SEA Topic	Key Messages	Plans, Policies and Programmes
	To ensure secure, safe, reliable, sustainable and affordable supplies of water are provided.	World Health Organisation (2004) Children's Environment and Health Action Plan for Europe **National:** Defra (2025) National Policy Statement for Water Resources Infrastructure Defra (2023) Environmental Improvement Plan 2023 Defra (2023) Statutory Biodiversity Metric: Tools and Guides Defra (2015) The government's response to the Natural Capital Committee's third State of Natural Capital report Defra (2021) Defra Outcome Delivery Plan: 2021 to 2022 Department for Ministry of Housing, Communities & Local Government (MHCLG) (2024) National Planning Policy Framework Environment Agency (2025) National Framework for Water Resources 2025: Water for Growth, Nature and a Resilient Future Environment Agency (2025) National Framework for Growth, Nature and a Resilient Future Environment Agency, Office for Water Services and Natural Resources Wales (2023) Water resources planning guidelineHM Government (1990) Town and Country Planning Act 1990 HM Government (1990) Environmental Protection Act HM Government (2006) The Environmental Noise (England) Regulations 2006 HM Government (2010) The Air Quality Standards Regulations 2010 HM Government (2011) Localism Act 2011 HM Government (2015) The Environmental Damage (Prevention and Remediation) (England) Regulations 2015 HM Government (2016) Environmental Permitting (England and Wales) Regulations 2016 (as amended 2018) HM Government (2016) The Water Supply (Water Quality) Regulations 2016 HM Government (2017) The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 HM Government (2018) A Green Future: Our 25 year Plan to Improve the Environment HM Government (2021) Environment Act 2021 National Infrastructure Commission (2018) Preparing for a Drier Future, England's Water Infrastructure Needs
	Increase awareness around the value and health benefits of water and encourage its sustainable use.	

SEA Topic	Key Messages	Plans, Policies and Programmes
		Water UK (2016) Water Resources Planning Framework (2015-2065) Water UK (2022) Water 2050 – A White Paper **Regional/Local:** Green Infrastructure Strategies (various) Mayor of London (2018) Zero carbon London: A 1.5ºC compatible plan Mayor of London (2015) London Infrastructure Plan 2050 Mayor of London (2018) London Environment Strategy Mayor of London (2021) The London Plan Public Rights of Way Improvement Plans (ROWIPs) Thames Water Utilities Ltd (2020), Our Business Plan 2025-2030 Oxfordshire Local Enterprise Partnership (OxLEP), now operating as Enterprise Oxfordshire (2025) Oxfordshire Strategic Economic Plan 2023-2033
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 Consider issues of water demand, water supply and water quality in the natural environment and ensure a sustainable use of water resources Contribute to a resource efficient, green and competitive low carbon economy. Maintain a reliable public water supply and ensure there is enough water for human uses, as well as providing an improved water environment Accelerating the transition to sustainable forms of energy and achieving regional renewable energy deployment targets	**International:** European Commission (1999) Landfill of Waste Directive (99/31/EC) United Nations (2002) The World Summit on Sustainable Development United Nations (2015) The 2030 Agenda for Sustainable Development **National:** Canal and River Trust (2015) Water Resources Strategy 2015 – 2020 DESNZ and BEIS (2020) Energy white paper: Powering our net zero future DESNZ and BEIS (2021) Heat and buildings strategy DESNZ and BEIS (2021) Net Zero Strategy: Build Back Greener Defra (2008) Future Water: the Government's water strategy for England Defra (2011) Government Review of Waste Policy in England 2011 Defra (2012) National Policy Statement for Waste Water Environment Agency (2025) National Framework for Water Resources 2025: Water for Growth, Nature and a Resilient Future Defra (2021) Waste Management Plan for England Defra (2023) Environmental Improvement Plan 2023 Defra (2025) Environmental Improvement Plan annual progress report: April 2024 to March 2025

SEA Topic	Key Messages	Plans, Policies and Programmes
	Minimise the production of waste, ensure waste management is in line with the 'waste hierarchy', and eliminate waste sent to landfill.	Defra and the Environment Agency (2018) Resources and Waste Strategy for England for England Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government) (2014) National Planning Policy for Waste Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2015) Renewable and Low Carbon Energy Environment Agency (2025) National Framework for Water Resources 2025: Water for Growth, Nature and a Resilient Future HM Treasury (2015) Fixing the Foundations: creating a more prosperous nation. HM Government (1994) Urban Waste Water Treatment (England and Wales) Regulations 1994 HM Government (2009) The UK Renewable Energy Strategy HM Government (2017, updated 2019) UK Clean Growth Strategy: Leading the way to a low carbon future HM Government (2020) Energy White Paper: Powering our Net Zero Future HM Government (2021) Environment Act 2021 HM Treasury (2020) Natural Infrastructure Strategy HM Government (2025) Draft Planning and Infrastructure Bill JNCC, Defra, DAERA (Northern Ireland), Scottish Government, Welsh Government (2024) UK Biodiversity Framework (UKBF) **Regional/Local:** Mayor of London (2021) The London Plan Mayor of London (2018) Zero carbon London: A 1.5ºC compatible plan Mayor of London (2018) London Environment Strategy National Park Authorities Management Plans Water Company (various) Drought Plans adjacent to supply area Thames Water Utilities Ltd (2024), Final Water Resources Management Plan 2024 Thames Water Utilities Ltd (2023) Drainage & Wastewater Management Plan 2023 Oxfordshire Local Enterprise Partnership (OxLEP), now operating as Enterprise Oxfordshire (2025) Oxfordshire Strategic Economic Plan 2023-2033

SEA Topic	Key Messages	Plans, Policies and Programmes
Water	Promote sustainable water resource management, including a reduction in water consumption Maintain and improve water quality (surface waters, groundwater and bathing waters) Expanding the scope of water protection to all waters, 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 Ensure appropriate management of abstractions and protect flow and level variability across the full range of regimes from low to high conditions Prevent deterioration of WFD waterbody status	**International:** United Nations (2002) The World Summit on Sustainable Development United Nations (2015) The 2030 Agenda for Sustainable Development **National:** Canal and River Trust (2015) Water Resources Strategy 2015 – 2020 Canal & River Trust (2015) Living Waterways Transform Places & Enrich Lives: Our 10 Year Strategy Cefas, Natural Resources Wales (NRW), Environment Agency (2024) Assessment of Salmon Stocks and Fisheries in England and Wales 2023. Environment Agency and Defra (2020) National Flood and Coastal Erosion Risk Management Strategy for England Agency (2024) Shoreline Management Plan Guidance Environment Agency (2025) National Framework for Water Resources 2025: Water for Growth, Nature and a Resilient Future Defra (2025) National Policy Statement for Water Resources Infrastructure Defra (2023) Environmental Improvement Plan 2023 Defra (2012) National Policy Statement for Waste Water Defra, Environment Agency, and Welsh Government (2021) River Basin Planning Guidance (2021) Defra (2015) The government's response to the Natural Capital Committee's third State of Natural Capital report Defra (2018) Farming rules for water – getting full value from fertilisers and soil Defra and Environment Agency (2025) Water Company Drought Plan Guideline (2025) Defra (2022) UK Climate Change Risk Assessment 2022 Defra (2025) National Policy Statement for Water Resources Infrastructure Defra (2023) Environmental Improvement Plan 2023 Defra (2025) Environmental Improvement Plan annual progress report: April 2024 to March 2025 Statement for Water Resources Infrastructure Environment Agency (2025) National Framework for Water Resources 2025: Water for Growth, Nature and a Resilient future Environment Agency (2013), Managing Water Abstraction

SEA Topic	Key Messages	Plans, Policies and Programmes
	Balance the abstraction of water for supply with the other functions and services the water environment performs or provides.	Environment Agency (2020) National Flood and Coastal Erosion Risk Management Strategy for England Environment Agency CAMS (various) Environment Agency (2022) Flood Risk Management Plans 2021 to 2027 Environment Agency and other lead authorities Shoreline Management Plans Environment Agency and Defra (2023) Water Resources Planning Guideline (WRPG) HM Government (1975) Reservoirs Act HM Government (1975) Salmon and Freshwater Fisheries Act 1975 HM Government (1991) Water Industry Act 1991 was amended by the commencement of Section 36 of the Flood and Water Management Act 2010 HM Government (1994) Urban Waste Water Treatment (England and Wales) Regulations 1994 HM Government (2007) Water Resources Management Plan Regulations 2007 Defra (2010 c.29) Flood and Water Management Act 2010 HM Government (2009) The Groundwater (England and Wales) Regulations 2009 HM Government (2009) The Water Resources Act 1991 (Amendment) (England and Wales) Regulations 2009 HM Government (2010) Flood and Water Management Act 2010 HM Government (2011) UK Marine Policy Statement Defra (2025) Marine Strategy Part Three: 2025 UK Programme of Measures HM Government (2013) The Bathing Water Regulations 2013 HM Government (2018) A Green Future: Our 25 year Plan to Improve the Environment HM Government (2014) Water Act 2014 HM Government (2025) Water (Special Measures) Act 2025 HM Government (2015) The Nitrate Pollution Prevention Regulations 2015 HM Government (2015) The Environmental Damage (Prevention and Remediation) (England) Regulations 2015 HM Government (2016) Environmental Permitting (England and Wales) Regulations 2016 (as amended 2018) HM Government (2016) The Water Supply (Water Quality) Regulations 2016 HM Government (2017) The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 HM Government (2020) The Agriculture Act 2020 HM Government (2021) Environment Act 2021
	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.	
	Promote measures to enable and sustain long term improvements in water efficiency.	
	Ensure a sustainable balance between the supply and demand for water.	
	Encourage more efficient use of water and promote awareness of water sustainability.	

SEA Topic	Key Messages	Plans, Policies and Programmes
		National Infrastructure Commission (2018) Preparing for a drier future: England's water infrastructure needs Natural England (2016) A narrative for conserving freshwater and wetland habitats in England Ofwat (2016) Water 2020 Ofwat (2017) Resilience in the Round UKTAG: Phase 3 Review of Environmental Standards Water Resources Management Plans and Drought Plans from adjacent water companies to Thames Water assessment area Waterwise (2017) Water Efficiency Strategy for the UK Water UK (2016) Water Resources Long-term Planning Framework (2015 – 2065) Water UK (2022) Water 2050 – A White Paper **Regional/Local:** Environment Agency (2025) Water Industry National Environment Programme (WINEP), National Full data set: Thames Region Environment Agency (2019) Catchment Abstraction Management Strategies (CAMS) (various) Environment Agency and other lead authorities Shoreline Management Plans Environment Agency (2022) Thames River Basin District Flood Risk Management Plan 2021 to 2027 Environment Agency (2022) Thames River Basin District River Basin Management Plan Environment Agency (2009) Thames: Catchment Flood Management Plan Environment Agency Area Drought Plans (various) Mayor of London, London Infrastructure Plan 2050 Mayor of London (2018) London Environment Strategy Mayor of London (2021) The London Plan Mayor of London (2011) Securing London's Water Future, The Mayor's Water Strategy Thames Water Utilities Ltd (2025), Our Business Plan 2025-2030 Thames Water Utilities Ltd (2023), Final Water Resources Management Plan 2024 Thames Water Utilities Ltd (2023) Drainage & Wastewater Management Plan 2023 Water Company (various) Drought Plans adjacent to supply area

SEA Topic	Key Messages	Plans, Policies and Programmes
		Water Resources South East (WRSE) Water Resources South East – Regional Plan Final (2024) Marine Management Organisation (2016) South East Marine Plan
Soil, geology and land use	Maintain the quality and diversity of geology and soils, which can be lost or damaged by insensitive development 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. Promote catchment-wide approach to land management by relevant stakeholders, in order to benefit natural resources, reduce pollution and develop resilience to climate change. 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 the effective use of land by reusing land that has been previously developed (brownfield land), provided that it is not of high environmental value.	**International:** European Commission (1999) Landfill of Waste Directive (99/31/EC) United Nations (2002) The World Summit on Sustainable Development. **National:** Defra (2011) Safeguarding our Soils – A Strategy for England Defra (2018) Farming rules for water – getting full value from fertilisers and soil Defra (2020) National food strategy for England Defra (2020) The Path to Sustainable Farming: An Agricultural Transition Plan 2021 to 2024 Defra (2023) Environmental Improvement Plan 2023 Defra (2025) Environmental Improvement Plan annual progress report: April 2024 to March 2025 Defra (2025) The Government's Approach to Rural Proofing Environment Agency (2019) State of the Environment: Soil Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local (2024) National Planning Policy Framework HM Government (1990) Town and Country Planning Act 1990 HM Government (1981) Wildlife and Countryside Act 1981 HM Government (2006) Natural Environment and Rural Communities Act 2006 HM Government (2015) The Nitrate Pollution Prevention Regulations 2015 HM Government (2020) The Agriculture Act 2020 HM Government (2021) Environment Act 2021 National Assembly for Wales (2016) Environment (Wales) Act 2016 Natural England (2011) UK Geodiversity Action Plan **Regional/local:** AONB Management Plans (various) National Park Authorities Management Plans (various) Mayor of London (2021) The London Plan

SEA Topic	Key Messages	Plans, Policies and Programmes
		Mayor of London (2015) London Infrastructure Plan 2050 Natural England - National Character Area (NCA) profiles Local Geodiversity Action Plans (LGAPs) Local Planning Authority (various) Local Plans/Local Development Plans
Air and climate	Reduce greenhouse gas emissions. Targets include: bring UK's greenhouse gas emissions to net zero by 2050 and cut London's CO2 emissions by 60% by 2030.	**International:** The Paris Agreement (2016), The Cancun Agreement (2011) & Kyoto Agreement (1997) European Commission (2008) Ambient Air Quality Directive (2008/50/EC) European Commission (2009) Promotion of the use of energy from renewable sources Directive (2009/28/EC) European Commission (2005) Thematic Strategy on Air Pollution European Commission (2016) National Emissions reduction Commitments (NEC) Directive 2016/2284/EU European Parliament and Council of the European Union (2024) Directive (EU) 2024/2881 of the European Parliament and of the Council on Ambient Air Quality and Cleaner Air for Europe (Recast) Framework Fourth Daughter Directive 2004/107/EC and previous directives (96/62/EC; 99/30/EC; 2000/69/EC & 2002/3/EC) **National:** DESNZ (2023) National Policy Statements for energy infrastructure DESNZ and BEIS (2020) Energy white paper: Powering our net zero future DESNZ and BEIS (2021) Heat and buildings strategy DESNZ and BEIS (2021) Net Zero Strategy: Build Back Greener Department for Transport (2022) UK Electric Vehicle Infrastructure Strategy Defra (2023) The Air Quality Strategy for England: Framework for Local Auhtority Delivery Defra (2011) England Biodiversity Strategy – Climate Change Adaptation Principles: Conserving Biodiversity in a Changing Climate Defra (2011) Future Water: the Government's water strategy for England Defra (2007) Conserving Biodiversity in a Changing Climate: Guidance on Building Capacity to Adapt Defra (2024) Understanding Climate Adaptation and the Third National Adaptation Programme (NAP3) Defra (2017) Air Quality Plan for Nitrogen Dioxide (NO2) in UK Defra (2023) Environmental Improvement Plan 2023 Defra (2025) Environmental Improvement Plan annual progress report: April 2024 to March 2025
	Reduce the effects of air pollution on ecosystems.	
	Improve overall air quality	
	Minimise energy consumption, support the use of sustainable/renewable energy and improve resilience to climate change.	
	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.	

SEA Topic	Key Messages	Plans, Policies and Programmes
	Build in adaption to climate change to future planning and consider the level of urgency of associated risks of climate change impacts accordingly.	Defra (2024) Understanding climate adaptation and the third National Adaptation Programme (NAP3) Defra (2023) The Air Quality Strategy for England: Framework for Local Authority Delivery Historic England (2022) Historic England Climate Change Strategy Welsh Government/Cadw (2020) Historic Environment and Climate Change in Wales: Sector Adaptation Plan Historic England (2022) Climate change adaptation report
	Need for adaptive measures to respond to likely climate change impacts on water supply and demand.	HM Government (2006) Climate Change and Sustainable Energy Act 2006 HM Government (2010) The Air Quality Standards Regulations 2010 HM Government (2015) Ozone-Depleting Substances Regulations 2015 HM Government (2018) A Green Future: Our 25 Year Plan to Improve the Environment HM Government (2020) Energy White Paper: Powering our Net Zero Future HM Government (2021) Environment Act 2021 HM Government (2022) UK Climate Change Risk Assessment 2022 HM Government (2023) The Energy Act 2023 Natural England National Character Area (NCA) Profiles The Climate Change Act 2008 UKCIP (2018) UK Climate Projections UKCP18 **Regional/Local:** Mayor of London (2018) Zero carbon London: A 1.5ºC compatible plan Mayor of London (2018) London Environment Strategy UKCIP (2018) UK Climate Projections UKCP18 (2018)
Archaeology and cultural heritage	Built development in the vicinity of heritage assets could have implications for the significance of the setting and/or built fabric	**International:** Council of Europe (1985) Convention for the Protection of the Architectural Heritage of Europe (Granada Convention) Council of Europe (1992) Valletta Convention on Protection of Archaeology UNESCO, ICOMOS, ICCROM, and IUCN (2022) Guidance and Toolkit for Impact Assessments in a World Heritage Context
	Ensure active management of the Region's finite and irreplaceable environmental and cultural assets.	

SEA Topic	Key Messages	Plans, Policies and Programmes
	Ensure effects resulting from changes to water level (surface or sub-surface) on all water dependent historical and cultural assets are avoided.	UNESCO (1972) Convention Concerning the Protection of the World Cultural and Natural Heritage UNESCO (2001) Convention on the Protection of Underwater Cultural Heritage **National:** DCMS (2013) Scheduled Monuments & Nationally Important but Non-Scheduled Monuments DCMS (2016) The Culture White Paper Defra (2011) The Natural Choice: Securing the Value of Nature Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local (2024) National Planning Policy Framework Historic England (various) Heritage at Risk Historic England (2017) The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (Second Edition) Historic England (2016) Historic England Advice Note 8: Sustainability Appraisal and Strategic Environmental Assessment Historic England (2022) Climate change adaptation report Historic England (2022) Heritage and Climate Change Historic England (2024) Heritage Counts: Designated Assets, Protected Areas and the Built Environment Historic England (2015) The Historic Environment in Local Plans Historic Environment Good Practice Advice in Planning: 1 Historic England Historic Environment Record Historic England The National Heritage List for England HM Government (1953) Historic Buildings and Ancient Monuments Act 1953 HM Government (1973) Protection of Wrecks Act 1973 HM Government (1979) Ancient Monuments and Archaeological Areas Act 1979 HM Government (1990) Planning (Listed Buildings and Conservation Areas) Act 1990 HM Government (2002) The National Heritage Act 2002 HM Government (2018) A Green Future: Our 25 Year Plan to Improve the Environment HM Government (2021) Environment Act 2021 HM Government (2023) Levelling-up and Regeneration Act 2023 HM Government (1997) Hedgerow Regulations 1997 Department for Culture, Media and Sport (2025) Principles of Selection for Listed Buildings
	Promote the conservation and enhancement of the historic environment and its component heritage assets.	
	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.	
	Consider effects on important wetland areas with potential for paleo-environmental deposits.	

SEA Topic	Key Messages	Plans, Policies and Programmes
		Regional/Local: National Landscape/AONB Management Units (various) National Landscape/AONB Management Plans Historic England (2024) Heritage at Risk Register Local Plans (various) Local Heritage/Conservation Strategies (various) Conservation Area Character Appraisals and Management Plans (various)
Landscape and visual amenity	Protection and enhancement of urban and rural landscapes (including designated landscapes, landscape character and the countryside).	**International:** Council of Europe (2000) European Landscape Convention (Florence Convention) **National:** Defra (2023) Environmental Improvement Plan 2023 Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local (2024) National Planning Policy Framework Defra (2023) Environmental Improvement Plan 2023 Defra (2025) The Government's Approach to Rural Proofing HM Government (2023) Levelling Up and Regeneration Act 2023 HM Government (1981) Wildlife and Countryside Act 1981 HM Government (2000) Countryside and Rights of Way (CROW) Act 2000 Historic England (2017) The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (Second Edition) HM Government (2018) A Green Future: Our 25 Year Plan to Improve the Environment HM Government (2021) Environment Act 2021 Wildlife and Countryside Act 1981 (as amended) **Regional/Local:** National Landscape (formerly AONB) Management Units (various) National Landscape/AONB Management Plans
	Abstraction and low river flows could negatively affect landscape and visual amenity.	
	Enhance the value of the countryside by protecting the natural environment for this and future generations	
	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.	

SEA Topic	Key Messages	Plans, Policies and Programmes
	Ensure good access to valued areas of landscape character in sustainable ways to enhance its enjoyment and value by visitors and stakeholders. This includes protecting National trails and Public Rights of Way.	Mayor of London (2021) The London Plan Mayor of London (2018) London Environment Strategy National Park (various) National Park Management Plans Thames Landscape Strategy (2012) Our Guidance Document: The Thames Landscape Strategy Review 2012

3. ENVIRONMENTAL BASELINE REVIEW

3.1 INTRODUCTION

A fundamental component of the SEA process is to identify the current baseline conditions and how these might evolve. An awareness of existing conditions ensures that the impacts of the DP can be identified, mitigated and monitored.

The SEA Regulations require that the evolution of baseline conditions of the plan area (that would take place with or without implementation of the plan) is determined. This is useful when identifying impact significance, particularly with regards to baseline conditions that may already be improving or worsening and the rate of such change.

Full environmental baseline data is presented in **Appendix B** and have been drawn from a variety of sources, including a number of the plans and programmes reviewed as part of the SEA process given in **Table 2-1**. This environmental baseline review also summarises the likely future trends for the environmental issues being considered (where information is available). The key issues arising from the review of baseline conditions are summarised in **Section 3.4**.

3.2 LIMITATIONS OF THE DATA AND ASSUMPTIONS MADE

The Thames Water supply area is large and covers a number of regions, which makes establishing a baseline at the sub-regional level challenging. As such, this baseline information may not capture more localised issues that deviate from the general regional trends. For example, this may include locally important sites for recreation or any localised differences in environmental quality.

Data has generally been sourced from national or regional bodies where information is collected for the Thames Water region. 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 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 mean that available information is dated.

3.3 OVERVIEW

The Thames Water supply area is approximately 12,900 km^2 in area. Approximately two-thirds of the catchment is permeable, consisting of chalk, middle Jurassic limestones and river gravels, and is thus subject to direct recharge from rainfall. The Thames river basin is conventionally divided into four zones: the tidal, lower, middle and upper Thames. The upper Thames flows through a predominantly rural landscape and does not pass through any major towns. The middle Thames, from its confluence with the River Windrush to Teddington at the head of the Thames estuary, is also rural, passing through some towns, and becomes predominantly urban as it heads towards London.

The Thames Valley and London normally receive less than 650mm of rainfall per year, and less than 550mm around the Thames Estuary[16]. Average yearly rainfall is greater in the west than the east of the region. The River Thames is an important water source for Thames Water and other water companies for supplying drinking water to the Thames Valley and providing two-thirds of London's drinking water. Groundwater, particularly the chalk aquifer, is also an important source providing around 40% of public water supplies. Water demand in the Thames River Basin District is high compared to other parts of the country, placing significant pressure on water resources in an area already utilising its available supplies [17].

[16] Met Office (2016) Accessed at https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/regional-climates/southern-england_-climate---met-office.pdf

[17] British Geological Survey (n.d) Overview of the Thames Basin Available at https://www2.bgs.ac.uk/groundwater/waterResources/thames/overview.html#:~:text=The%20region%20is%20one%20of,%2C%20Oxford%2C%20Swindon%20and%20Reading. [Accessed March 2025]

The Thames Water supply area spans four NUTS (nomenclature of territorial units for statistics)[18] regions; the South East, London, East and South West (see **Figure 1-1**). The baseline information has been presented at local, regional and national levels where possible for comparative reasons and to aid the assessment during Stage B of the SEA:

Local: The baseline within the Thames Water supply area or within a specific WRZ. These data are usually sourced directly from Thames Water. Spatial analysis also allows the presentation of data that lie within the Thames Water supply area or scheme source area. In some circumstances London is discussed separately from the rest of the supply area due to its characteristics and importance as the capital.

Regional: The baseline in the counties or regions that the Thames Water supply region and scheme source areas cover. The Thames Region RBMP is a valuable source of information that includes the Thames Water supply region as well as the remainder of the Thames catchment.

National: The baseline for the UK, England or in some cases the agglomerated baseline for the four regions that the Thames Water supply region intersects.

The baseline has been reviewed for each of the SEA topics and is presented in full in **Appendix B**. Key issues identified from the baseline are presented in **Section 3.4**.

3.4 SUMMARY OF KEY ISSUES

A summary of the key sustainability issues arising from the review of plans, policies and programmes and baseline are identified below for the SEA.

3.4.1 Biodiversity, Fauna and Flora Key Issues

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

- The need to protect, conserve and enhance biodiversity, ecological functions and biodiversity connectivity within Thames Water's supply and source areas, 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 to create functioning habitat corridors.
- The need to control the spread of Invasive Non-Native Species (INNS)
- The need to recognise the importance of allowing wildlife to adapt to climate change.
- The need to engage more people in biodiversity issues so that they personally value biodiversity and know what they can do to help, including through recognising the value of the ecosystem services.

3.4.2 Population and Human Health 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 public awareness of drought conditions and importance of maintaining resilient, reliable public water supplies without the need for emergency drought measures.
- The need to ensure water quantity and quality in rivers is maintained for a range of uses including tourism, recreation, navigation and other use such as agriculture.
- 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, protecting and enhancing recreation resources, green infrastructure and the natural and historic environment.
- The need to accommodate an increasing population.

[18] 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.

- Sites of nature conservation importance, heritage assets, water resources, important landscapes and public rights of way contribute to recreation and tourism opportunities and subsequently health and wellbeing and the economy.

3.4.3 Material Assets and Resource Use 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.
- The need to continue to reduce leakage from the water supply system to help reduce demand for water.
- Daily consumption of water is higher than the national average in the area and consequently there is a continued need to encourage more efficient water use.

3.4.4 Water Key Issues

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

- The need to further improve the quality of the region's river, estuarine and coastal waters taking into account WFD objectives and ensure no deterioration where improvement is not feasible.
- The need to maintain the quantity and quality of groundwater resources taking into account WFD objectives and ensure no deterioration.
- The need to improve the resilience, flexibility and sustainability of water resources in the region, particularly in light of potential climate change impacts on surface waters and groundwaters.
- The need to ensure sustainable abstraction to protect the water environment and meet society's needs for a resilient water supply.
- The need to ensure that people understand the value of water.

Flooding is not viewed as a key issue for the SEA water topic, because none of the drought options involve the construction of permanent physical infrastructure within areas at risk of flooding. One potential drought option for inclusion in DP 2027 involves river augmentation (the KEN_0006). The KEN_0006 is a strategic drought option, the licence for which is held by the Environment Agency. Operation of the scheme would be managed between Thames Water and the Environment Agency, taking into consideration environmental implications.

3.4.5 Soil, Geology and Landscape Key Issues

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

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

3.4.6 Air and Climate Key Issues

The key sustainability issue arising from the baseline assessment for air and climate is:

- The need to reduce air pollutant and greenhouse emissions and limit air emissions to comply with air quality standards.
- The need to mitigate against climate change through the reduction of 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, sustainable water resource management, water use efficiencies, specific aspects of natural ecosystems (e.g. connectivity) as well as accommodating potential opportunities afforded by climate change.

3.4.7 Archaeology and Cultural Heritage Key Issues

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

- The need to conserve and enhance the historic and cultural significance (including any contribution made by the setting) of heritage assets, particularly where they are sensitive to the water environment or may be affected by DP-related development.
- The need to conserve and enhance the World Heritage Sites within the DP area.
- The need to protect water-dependent heritage sites during drought conditions, including important wetland areas with potential for paleoenvironmental deposits.

3.4.8 Landscape and Visual Amenity 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 National Parks, National Landscapes and other areas of high landscape and visual amenity value.
- The need to minimise any adverse impacts upon landscape that may result from the DP.
- The need to conserve and enhance landscape character and distinctiveness, taking into account the effects of climate change.

3.4.9 Inter-relationships

It is noted that there are inter-relationships between SEA topics, for example, the potential impacts of changes to flow regime and water quality on ecology. Inter-relationships that result in changes to individual effect are considered through the assessment of synergistic effects.

4. METHODOLOGY

4.1 INTRODUCTION

This section describes the methodology that has been used to undertake the SEA of the drought options in Thames Water's final 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

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.

4.2 ASSESSMENT METHODOLOGY AND SEA FRAMEWORK

This section outlines the assessments that have been carried out in the SEA to identify the environmental effects of the drought options listed in Thames Water's Drought Plan 2027.

The environmental assessments of the drought options are 'objectives-led'. Establishing assessment objectives is a recognised way of considering the environmental effects of a plan and comparing the effects of alternatives. 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 3.4).

An assessment framework of objectives has been developed based on:

- The current state of the environment in the Thames Water water supply area (see Section 3.3).
- The key environmental issues identified (see Section 3.4).
- The key policy messages and environmental protection objectives identified in the review of policies, and other plans and programmes (see Section 2). It is important that the assessment takes these objectives into account as this will help it to highlight any area where the DP will help or hinder the achievement of the objectives of other plans (e.g. at local, national and international level – see review of Plans, Policies and Programmes in Section 2.2).

Final SEA objectives are set out in **Table 4-1** alongside the key messages identified from the review of policies, plans and programmes and the key issues from the review of baseline information. The following sections describe how Thames Water used these SEA objectives in the assessment of the environmental effects of the drought options. These SEA objectives are intended to reflect changes that contribute to sustainability. By assessing each drought option against the objectives, it is more apparent where drought options might have a negative impact, and where options could be developed to reduce potential impacts.

As well as the overall SEA objectives, a number of key questions have been developed for each SEA topic. These key questions prompt the assessment and ensure it considers all the relevant aspects. The assessment of each option required the following information, some of which was available from the DP:

- Details of each potential drought management measure;

- Likelihood and predicted frequency of deployment of the measure;
- Construction (where applicable) and operational/implementation details;
- Relevant information contained in Environmental Assessment Reports (EARs) relating to drought permit options;
- Benefits to the water supply-demand position in a drought (taking uncertainty into account); and
- Key elements of the baseline environment, such as location of designated sites, priority habitats and species, landscape areas or heritage assets, recreational facilities and other environmental features.

Table 4-1: SEA Objectives and assessment approach

SEA Topic	Policies, Plans and Programmes Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
Biodiversity, flora and fauna	Conservation and enhancement of the natural environment and of biodiversity, particularly internationally and nationally designated sites, whilst taking into account future climate change. Promote a catchment-wide approach to water management to ensure better protection of biodiversity. To achieve favourable condition for priority habitats and species, including UK NERC habitats and species. Avoidance of activities likely to cause irreversible damage to nature conservation and natural heritage. Support 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. Protection, conservation and enhancement of natural capital. Ecosystem services from natural capital contributes to the economy and therefore should be protected and, where possible, enhanced.	The need to protect, conserve and enhance biodiversity, ecological functions and biodiversity connectivity within Thames Water's supply and source areas, 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 to create functioning habitat corridors. The need to control the spread of Invasive Non-Native Species (INNS) The need to recognise the importance of allowing wildlife to adapt to climate change. The need to engage more people in biodiversity issues so that they personally value biodiversity and know what they can do to help, including through recognising the value of the ecosystem services.	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and to protect and enhance natural capital and the biodiversity and ecosystem services that contribute to the economy. 1.2 To avoid introducing or spreading INNS.	Will it protect the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial habitats and species including food availability, reproduction, risk of predation and decline, competition and their survival? Will it limit impacts on ecology resulting from changes in water quality, temperature fluctuations, or increased risk of algal blooms? Will it prolong the impact of drought on habitats and species? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish?

SEA Topic	Policies, Plans and Programmes Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	To seek opportunities for biodiversity net gain from infrastructure development. Avoidance of activities likely to increase the risk of spread of Invasive Non-Native Species (INNS).			Will it protect or enhance natural capital and ecosystem services? Will it maintain or enhance access to areas of natural heritage interest? Will it limit, reduce or increase the risk of spread of Invasive Non-Native Species (INNS)?
Population and human health	Water resources play an important role in supporting the health and recreational needs of local communities. Effective water resource management can create opportunities for regeneration, tourism and the wider economy. The issue of water supply is becoming a development constraint in some areas, which is recognised as an issue in the NPPF. To ensure all communities have a clean, safe and attractive environment in which people can take pride. To ensure secure, safe, reliable, sustainable and affordable supplies of water are provided. Increase awareness around the value and health benefits of water and encourage its sustainable use.	The need to ensure continued improvements in levels of health across the region, particularly in urban areas and deprived areas. The need to ensure public awareness of drought conditions and importance of maintaining resilient, reliable public water supplies without the need for emergency drought measures. The need to ensure water quantity and quality in rivers is maintained for a range of uses including tourism, recreation, navigation and other use such as agriculture. 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, protecting and enhancing recreation resources, green	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being). 2.2 To protect and enhance the water environment for other users including recreation, tourism, navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way). 2.3 To promote a sustainable economy with good access to essential services, including a secure, affordable supply of water.	Will it help to ensure access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it protect or enhance opportunities for recreation and tourist activities, including navigation? Will it help to promote healthy communities and protect from risks to health and wellbeing? Will it assist in ensuring provision of essential infrastructure services to support a sustainable economy?

SEA Topic	Policies, Plans and Programmes Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
		infrastructure and the natural and historic environment. The need to accommodate an increasing population. Sites of nature conservation importance, heritage assets, water resources, important landscapes and public rights of way contribute to recreation and tourism opportunities and subsequently health and wellbeing and the economy.		
Material assets and resource use	Promote sustainable management of natural resources, sustainable production and consumption whilst seeking to reduce the amount of waste generated by using materials, energy and water more efficiently. Consider issues of water demand, water supply and water quality in the natural environment and ensure a sustainable use of water resources. Contribute to a resource efficient, green and competitive low carbon economy. 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 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. The need to continue to reduce leakage from the water supply system to help reduce demand for water. Daily consumption of water is higher than the national average in the area and consequently there is a continued need to encourage more efficient water use.	3.1 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. 3.2 To promote the sustainable management of natural resources including efficient water resource management and to ensure water supply for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it minimise the use of energy and promote energy efficiency? 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? Will it enable efficient water resource management and

SEA Topic	Policies, Plans and Programmes Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	Promote the sustainable management of natural resources.			ensure maintenance of water supplies?
Water	Promote sustainable water resource management, including a reduction in water consumption. Maintain and improve water quality (surface waters, groundwater and bathing waters). Expanding the scope of water protection to all waters, 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. Ensure appropriate management of abstractions and protect flow and level variability across the full range of regimes from low to high conditions. Prevent deterioration of WFD waterbody status. Balance the abstraction of water for supply with the other functions and services the water environment performs or provides. 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. Promote measures to enable and sustain long term improvements in water efficiency.	The need to further improve the quality of the region's river, estuarine and coastal waters taking into account WFD objectives and ensure no deterioration where improvement is not feasible. The need to maintain the quantity and quality of groundwater resources taking into account WFD objectives and ensure no deterioration. The need to improve the resilience, flexibility and sustainability of water resources in the region, particularly in light of potential climate change impacts on surface waters and groundwaters. The need to ensure sustainable abstraction to protect the water environment and meet society's needs for a resilient water supply. The need to ensure that people understand the value of water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation. 4.2 To protect and enhance surface and groundwater quality and avoid adversely affecting water body status. 4.3 To ensure appropriate and sustainable management of abstractions (or compensation flow) to maintain water supplies whilst protecting ecosystem functions that rely on water resources. 4.4 To promote measures to enable and sustain long term improvement in water efficiency.	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? Will it help to minimise risks associated with unsustainable abstraction of ground and surface waters? Will it affect the resilience of groundwater systems, including risk to recharge rates and recovery following drought? Will it abstract from a water resource with resource availability (with reference to CAMS status and WFD considerations)? Will it affect WFD compliance e.g. Good Environmental Status?

SEA Topic	Policies, Plans and Programmes Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	Ensure a sustainable balance between the supply and demand for water. Encourage more efficient use of water and promote awareness of water sustainability.			Will it affect river basin management plans? Will it alter the flow or level regime or residence time of surface waters or groundwaters? 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?
Soil, geology and land use	Maintain the quality and diversity of geology and soils, which can be lost or damaged by insensitive development. 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 protect and enhance geological features of importance (including geological SSSIs) and maintain and enhance soil function and health. The need to manage the land more holistically at the catchment level, benefitting landowners, other stakeholders, the environment and sustainability of natural resources (including water resources).	5.1 To protect and enhance geology, the quality and quantity of soils and geodiversity and promote a catchment-wide approach to land management.	Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it ensure efficient use of land (e.g. make use of previously developed land)?

SEA Topic	Policies, Plans and Programmes Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	Promote catchment-wide approach to land management by relevant stakeholders, in order to benefit natural resources, reduce pollution and develop resilience to climate change. 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 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 need to make use of previously developed land (brownfield land) and to reduce the prevalence of derelict land in the region.		Will it contribute towards a catchment-wide approach to land management?
Air and climate	Reduce greenhouse gas emissions. Targets include: bring UK's greenhouse gas emissions to net zero by 2050 and cut London's CO2 emissions by 60% by 2030. Reduce the effects of air pollution on ecosystems. Improve overall air quality Minimise energy consumption, support the use of sustainable/renewable energy and improve resilience to climate change. 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 reduce air pollutant and greenhouse emissions and limit air emissions to comply with air quality standards. The need to mitigate against climate change through the reduction of 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, sustainable water resource management, water use efficiencies, specific aspects of natural ecosystems (e.g. connectivity) as well as accommodating potential opportunities afforded by climate change.	6.1 To maintain and improve air quality 6.2 To reduce greenhouse gas emissions 6.3 To consider the need for adaptive measures for climate change	Will it reduce or minimise air pollutant and greenhouse gas emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat or more deprived area)? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)?

SEA Topic	Policies, Plans and Programmes Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	Build in adaption to climate change to future planning and consider the level of urgency of associated risks of climate change impacts accordingly. Need for adaptive measures to respond to likely climate change impacts on water supply and demand.			Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus?
Archaeology and cultural heritage	Built development in the vicinity of heritage assets could have implications for the significance of the setting and/or built fabric. Ensure active management of the Region's finite and irreplaceable environmental and cultural assets. Ensure effects resulting from changes to water level (surface or sub-surface) on all water dependent historical and cultural assets are avoided. Promote the conservation and enhancement of the historic environment and its component heritage assets. 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. Consider effects on important wetland areas with potential for paleo-environmental deposits.	The need to conserve and enhance the historic and cultural significance (including any contribution made by the setting) of heritage assets, particularly where they are sensitive to the water environment or may be affected by DP-related development. The need to conserve and enhance the World Heritage Sites within the DP area. The need to protect water-dependent heritage sites during drought conditions, including important wetland areas with potential for paleoenvironmental deposits.	7.1 To conserve and enhance the significance (including any contribution made by the setting) of heritage assets.	Will it avoid harm to heritage assets and their settings, including places and spaces that contribute to local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?

SEA Topic	Policies, Plans and Programmes Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
Landscape and visual amenity	Protection and enhancement of urban and rural landscapes (including designated landscapes, landscape character and the countryside). Abstraction and low river flows could negatively affect landscape and visual amenity. Enhance the value of the countryside by protecting the natural environment for this and future generations 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. Ensure good access to valued areas of landscape character in sustainable ways to enhance its enjoyment and value by visitors and stakeholders. This includes protecting National trails and Public Rights of Way.	The need to protect and improve the natural beauty of the region's National Parks, National Landscapes and other areas of high landscape and visual amenity value. The need to minimise any adverse impacts upon landscape that may result from the DP. The need to conserve and enhance landscape character and distinctiveness, taking into account the effects of climate change.	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands)? Will it avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character?

4.3 PRIMARY ASSESSMENT

4.3.1 Summarising the effects assessment

An appraisal framework is proposed to assess each of the drought options against the SEA objectives. The appraisal framework will be applied to test the performance of the drought options against the SEA objectives to see how far they go towards meeting the latter. The performance of options will be used to inform the priority of drought options for inclusion in Thames Water's Draft DP 2027 and inform the selection of options should a drought result in the DP to be put into operation. A draft of the appraisal framework table is given in **Table 4-2** and is structured as follows:

- The first and second columns of **Table 4-2** set out the SEA topics and objectives.
- The scale of the effect, which might relate to either geographical scale or the size of the population affected, is identified in the third column on a scale of small, medium to large.
- The impact evaluation includes consideration of the nature of the impact; certainty of effect, duration and permanence (fourth, fifth and sixth columns of **Table 4-2**) in accordance with criteria for determining the likely significance of effects specified in the SEA Regulations Part 2, Regulation 9(2a) and Schedule 1. With respect to duration of temporary effects, short-term impacts are defined as those that last for up to six months, medium term impacts are those that extend for six months to two years whilst longer term temporary impacts are assessed as those that extend to two to five years. A 'significant long term' temporary impact category is used for those temporary effects that continue beyond five years in duration.
- The seventh column identifies the magnitude of the effect on a scale of low, medium and high.
- The value/sensitivity of the receptor(s) is identified in the eighth column on a scale of low, medium and high.
- The ninth column provides a brief commentary and evaluation of the impact of the drought option on the objectives for each topic, with reference to the key questions proposed in **Table 4-2.** This brief commentary assumes the implementation of best practice in implementing the option, therefore the effects are referred to as residual and are largely temporary. Potential mitigation measures for any identified adverse effects arising from each option are identified within the appraisal framework.
- The residual adverse and beneficial effects (after application of best practice approaches and any appropriate and explicit mitigation measures) will be identified in the tenth and eleventh columns respectively. These will be identified separately so as to avoid mixing adverse and beneficial effects, in line with SEA best practice.

The SEA appraisal framework will be used to capture the assessment for each drought option.

The assessment will assume the implementation of standard best practice[19] in implementing the actions; and any defined mitigation measures (which will be clearly set out) so that the significance of effects relates to the residual effects after mitigation in line with the ODPM Practical Guide[20] and UKWIR SEA[21] national guidance. The mitigation measures for any identified adverse effects will be explicitly identified within the appraisal framework.

In some cases, there may be quantitative information to support the assessment, although it is acknowledged that in other cases, it may be necessary to consider additional qualitative information to derive the assessment. Objectives or indicator/guide questions that are not supported by available data

[19] In the context of a Drought Plan 'standard best practice' typically refers to established industry methods and procedures for implementing drought management actions and their associated mitigation measures. The relevant best practice measures will be set out during the assessment process.

[20] Office of the Deputy Prime Minister (2005) A Practical Guide to the Strategic Environmental Assessment Directive.

[21] UKWIR (2021) Environmental Assessment Guidance for Water Resources Management Plans and Drought Plans (WR/02/S). Prepared by Ricardo Energy & Environment.

or information will be evaluated using spatial analysis, professional judgement and relevant assessment guidelines relating to that topic/objective.

As described in **Section 1.5**, EARs have been prepared and will be updated for the drought permit/order options. Each EAR will be reviewed and the residual impacts to receptors (i.e. including those measures incorporated for avoidance, reduction or mitigation of impacts) will be used to inform the SEA. The results of the assessments of environmental risk identified by the EARs will be translated into potential magnitude of effect as used in the SEA methodology, which also considers the value and sensitivity of the receptor (see **Figure 4-1**). The SEA will also be informed by the plan level HRA which is being prepared concurrently and also draws on information contained within the EARs, where applicable. It is noted that the EARs and HRA are being prepared with information and data available at the time of writing and are to be reviewed and updated periodically to incorporate any changes to the baseline and any resulting implications for the impact assessment.

Varying levels of uncertainty are inherent within the assessment process. The assessment will minimise uncertainty through the application of expert judgement. The level of uncertainty of the option assessment for each SEA objective is included in the appraisal framework. Where there is significant uncertainty which precludes an effects assessment category being assigned for a particular SEA objective, an “uncertain” residual effects assessment label will be applied to that specific SEA objective.

Table 4-2: Example of a SEA Appraisal Framework Table to be Completed for Each Drought Option

Column1	2	3	4	5	6	7	8	9	10	11
Topic	SEA objective	Scale of effect: geographical &/or population affected (Small/ Medium/ Large)	Certainty of effect (Low/ Medium/ High)	Duration of effect (short/ medium /long term)	Permanence of effect (permanent/ temporary)	Magnitude of effect (Low/ Medium/ High)	Value/ sensitivity of receptor (Low/ Medium/ High)	Potential residual effect on sensitive receptors (assuming good practice construction methods)	Residual Adverse Effect (likely to remain after reasonable mitigation)	Residual Beneficial Effect (likely to remain after reasonable mitigation)
Biodiversity, fauna and flora	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species and consideration of adaptability to climate change) and to protect and enhance natural capital and the biodiversity and ecosystem services that contribute to the economy.									
	1.2 To avoid introducing or spreading INNS.									
Population and human health	2.1 To protect and improve health and well-being (including promoting the value of the water environment for health and wellbeing)									
	2.2 To protect and enhance opportunities for formal and informal recreation.									
	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.									

Column1	2	3	4	5	6	7	8	9	10	11
Material assets and resource use	3.1 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.									
	3.2 To promote efficient water resource management and the sustainable management of natural resources, ensuring water supply for homes and industry in the area is maintained.									
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.									
	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.									
	4.3 To ensure appropriate and sustainable management of abstractions (or compensation flow) to maintain water supplies whilst protecting ecosystem functions that rely on water resources.									
	4.4 To promote water efficiency and measures that enable sustainable water use									
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.									

Column1	2	3	4	5	6	7	8	9	10	11
	5.2 To protect and enhance the ecosystem services function of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.									
	5.3 To promote a catchment-wide approach to catchment land management.									
Air and Climate	6.1 To maintain and improve air quality.									
	6.2 To reduce greenhouse gas emissions.									
	6.3 To consider the need for adaptive measures for climate change.									
Archaeology and cultural heritage	7.1 To conserve and enhance the significance (including any contribution made by the setting) of heritage assets.									
Landscape and visual amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.									

4.3.2 Determining the Significance of Effects

For each SEA objective, a residual effects assessment is determined against a significance matrix (**Figure 4-1**) which takes account of the value/sensitivity of the receptor (e.g. air quality, river water quality, landscape value) and the magnitude of the assessed effect. This significance matrix comprises effects from 'major beneficial' to 'major adverse'. Hatching has been added to the box signifying low magnitude and high receptor value/sensitivity as this could result in a greater than 'moderate' effects being assigned dependent on the sensitivity/value of the receptor. This colour coding will be used to complete the columns for residual effects in the appraisal framework.

The resulting significance of effects will be used in the prioritisation of options. Also, where major adverse effects are predicted, broad measures envisaged to avoid, reduce and as fully as possible offset these effects on the environment (as a result of implementing the DP) will be outlined in the Environmental Report where relevant/appropriate. In some cases, the significance of impacts may not clear cut in each case, and professional judgement will be used in some cases to determine overall significance.

Figure 4-1: Significance matrix used to assess effects of each drought option on each SEA objective

Significance of Effect		Value/sensitivity of receptor: High	Value/sensitivity of receptor: Medium	Value/sensitivity of receptor: Low
Effect magnitude (includes scale of effect)	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	= Significance of effect dependent on value/sensitivity of receptor and magnitude	Minor Beneficial / Minor Adverse	Negligible

The definitions for 'significance' ratings as identified in the table above are provided below:

Major / Significant- effects represent key factors in the decision-making process. They are generally associated with sites and features of international, national or regional importance. If adverse, such resources/features are generally those which 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.

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.

For the **'high' effect magnitude** (top row), a major effect significance is assigned for both high and medium value receptors to reflect the magnitude of the effect.

For the **'low' effect magnitude and 'high' value receptor** (bottom left box), the significance of effect could be minor, moderate or major dependent on the precise nature of the impact or benefit.

All options– both supply-side measures and demand management measures – will be assessed and to the same level of detail, in line with the SEA legislative requirements, ODPM SEA Practical Guide[22] and the UKWIR Guidance[23]. The level of detail to be developed for the environmental assessment of each measure will be consistent with the strategic nature of SEA.

An appraisal framework table (example provided in **Table 4-2**) will be completed for each drought option and presented in full in an appendix to the Environmental Report.

4.3.3 Summarising the effects assessment

A summary of the assessment will be presented within the main text of the Environmental Report as a colour-coded visual evaluation matrix. An example of a visual evaluation matrix is given in **Table 4-3**. For each drought option and each SEA topic listed in the left-hand column of **Table 4-2**, the visual evaluation matrix summarises the likely significance of impacts (which will be discussed in full in the completed appraisal framework tables).

Table 4-3: Example of a Visual Evaluation Matrix

Objectives		*Objective 1.1*	*Objective 1.2*	*Objective 1.3*	*Objective 2.1*	*Objective 2.2*	*Objective 2.3*	*Objective 3.1*	*Objective 3.2*	*Objective 4.1*	*Objectives Cont..*	Commentary
Drought Option Name	Adverse	---	---	-	-	N/A	-	--	-	--	-	[summary]
	Beneficial	++	0	0	++	+	+	N/A	+	+++	+++	[summary]

Legend:	
Major Beneficial	+++
Moderate Beneficial	++
Minor Beneficial	+
Negligible	0
Minor Adverse	-
Moderate Adverse	--
Major Adverse	---
NOT APPLICABLE	N/A
Uncertain – insufficient data available to undertake assessment	?

4.3.4 Cumulative Effects

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….*" From here on in "cumulative effects" is taken to include secondary and synergistic effects.

As the combination of options that would be deployed in any one drought cannot be predetermined (see **Section 1**), a dedicated cumulative effects assessment will be undertaken in order to ensure that options are not mutually exclusive, or that combinations would not cause significant adverse impacts. This will involve examining the likely significant effects of each of the drought options individually, in combination with each other (both inter- and intra- water resource zone), and in combination with the implementation of other plans

[22] Office of the Deputy Prime Minister (2005) A Practical Guide to the Strategic Environmental Assessment Directive.

[23] UKWIR (2021) Environmental Assessment Guidance for Water Resources Management Plans and Drought Plans (WR/02/S). Prepared by Ricardo Energy & Environment.

and programmes. In assessing these effects, consideration will be given to other factors which may affect the receiving environment in the short, medium and long term.

The following cumulative assessments are proposed in the SEA:

1. Within Thames Water's entire water supply area, assessment of **cumulative impacts of each demand management option that could potentially be implemented at the same time**. Note that demand management options are consistent across the whole of Thames Water's region, and it is proposed that the assessment takes into account the implementation of each option across the whole of Thames Water's supply region. However, there may be instances when demand management measures are implemented in part of a supply area rather than the whole region. Demand management measures serve to reduce pressure on water resources and will have a positive influence on both supply side and drought permit/order options within each water resource zone (by reducing the demand for water). Therefore, demand management measures will not be assessed in detail against each supply side option, other than to acknowledge that they will have a net positive effect by reducing pressure on water resources.
2. Within and between each of Thames Water's WRZs, assessment of cumulative impacts of those supply side options, including drought permit / order options that could potentially be implemented at the same time (intra-zone and inter-zone). Mutually exclusive options (e.g. those that draw the same resource or use the same site) will also be identified.
3. Assessment of cumulative impacts of the Thames Water DP with the Thames Water WRMP (Final WRMP24), other water company DPs, WRMPs and Regional Plans, River Basin Management Plans (RBMPs) (and any other DPs prepared by other bodies, such as the Environment Agency and Canal & River Trust). The potential for a neighbouring company implementing options under its DP simultaneously will be considered. Neighbouring water companies will be included as consultees to the DP and associated SEA Environmental Report in order to identify any trans-boundary issues.
4. Assessment of potential cumulative impacts of the **Thames Water DP with any other identified relevant programmes, plans and projects** that may be in place / implemented during the period of the DP.

Thames Water will communicate with neighbouring companies regarding the schemes in their respective plans. Potential effects with other plans will be identified, particularly in the context of spatial and temporal proximity. This is especially important in identifying potential water resources impacts, although licence changes would always be subject to further investigation by the companies themselves and the Environment Agency. Potential cumulative effects with wider plans will also be assessed. If effects are identified they can be ameliorated with early stage mitigation and associated monitoring.

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 Thames Water's 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 will be 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 are the primary consideration (e.g. the same designated area or reach of river).

Due to the uncertainty of timing of implementation of drought options, assessment of each drought option with every other drought option will be 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 to be undertaken.

4.3.5 Limitations of the Study

SEA is a high-level assessment aimed at highlighting potential environmental concerns. The environmental data used in this assessment is based on that which is readily available from existing sources, e.g. statutory organisations, and environmental assessments of drought permit/order options already undertaken by Thames Water. No primary research or survey work has been carried out specifically to 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 Thames Water's DP should also be noted as discussed in Section 4.3.1, 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.

It should be noted that the EARs which have been prepared for the drought permits / order sites to support Thames Water's DP (see Section 1.5) have been undertaken in accordance with the updated Environment Agency Drought Plan Guidance. This states that the level of detail included in the EAR should be based on the level of risk posed by the action that is being assessed (e.g. based on the scale of the impact, the expected frequency of use or the importance or sensitivity of the site). The required level of assessment has been undertaken to help inform any potential residual effects of each drought option.

The EARs are currently being updated in parallel with the SEA. Where EARs have reached completion, their findings have been used to inform the SEA of drought options. However, for those EARs that were not finalised in time, previous assessments have been used therefore some divergence may occur between the SEA and the underlying assessments. Updates to existing EARs, as well as the preparation of additional options, will continue between the draft and final DP. The SEA will be subsequently revised to ensure alignment with the most up-to-date EARs and to account for any new options taken forward in the final DP.

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

5. ASSESSMENT OF DROUGHT OPTIONS

5.1 DROUGHT OPTIONS UNDER CONSIDERATION

Demand management schemes which have been assessed are common to all zones and are listed in **Table 1-1**. Supply side and drought permit/order drought options which have been assessed for each of the four WRZs are listed in **Table 1-2** and **Table 1-4**.

5.2 ASSESSMENT OF SCHEMES AGAINST SEA OBJECTIVES

Assessment of drought options has been carried out in accordance with the methodology described in Section 4. Appraisal framework assessment tables have been completed for each drought option, and are presented in full in **Appendix E**. A summary of the assessment is presented in this section as colour-coded VE matrices. For each drought option and each SEA topic and SEA objective listed in the left hand column of **Table 5-1**:, the VE matrix summarises the likely significance of residual impacts. The colour coding represents a range from significant adverse impact in red through to significant beneficial impacts in dark green (**Table 5-1**:).

Table 5-1: Visual evaluation matrix legend

	Colour	Significance of Effect
	Dark Green	Major Beneficial
	Mid Green	Moderate Beneficial
	Light Green	Minor Beneficial
	Negligible	Negligible
	Yellow	Minor Adverse
	Orange	Moderate Adverse
	Red	Major Adverse
	NONE APPLICABLE	NOT APPLICABLE

5.3 DEMAND SIDE OPTIONS

A visual summary of SEA conclusions for each of the demand side options in Thames Water's Final DP is provided in **Table 5-2.** The completed appraisal tables for each of the drought options are provided in **Appendix D**.

Overall, demand side measures serve to reduce pressure on water resources within each WRZ by reducing customer demand for water, and therefore reducing abstraction at source or preserving storage in reservoirs. This will in turn contribute to reducing the amount of energy needed for water abstraction, treatment and distribution. Demand side measures typically provide moderate beneficial effects such as protecting and enhancing health and well-being through maintaining water supplies for essential use, and promoting efficient and sustainable use of water. Minor adverse effects on horticulture businesses may be associated with temporary use bans as plant buying patterns may change, and impacts on businesses due to water use restrictions would increase in severity and spread to other sectors (e.g., businesses, recreation and tourism) should ordinary or emergency drought orders be implemented. Impacts from implementation of drought orders could also extend to archaeology and cultural heritage, due to the influence on the setting of cultural assets. Minor adverse effects may also be associated with emissions of air pollutants and greenhouse gas emissions from leakage reduction programme activities.

Table 5-2 Visual evaluation matrix summary for demand side options

		SEA Topic																Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water				Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage	Landscape	
Objective		**1.1**	**1.2**	**2.1**	**2.2**	**2.3**	**3.1**	**3.2**	**4.1**	**4.2**	**4.3**	**4.4**	**5.1**	**6.1**	**6.2**	**6.3**	**7.1**	**8.1**	
Media /water efficiency campaign	Adverse																		No adverse impacts have been identified for this drought plan option.
	Beneficial																		Beneficial impacts include reducing demand for water, securing supply of water for customers/businesses. Reducing the demand for water will also have beneficial effects on maintaining surface water and groundwater levels/flows, sustainable management of abstractions and enabling long term improvements in water efficiency. Reducing water demand will also help to improve the resilience of water supplies during drought.
Leakage reduction	Adverse																		Minor adverse effects identified are associated with emissions to air (air pollutants and greenhouse gas emissions) as a result of construction activities and vehicle movements. All other adverse effects identified are negligible.
	Beneficial																		Minor to moderate beneficial effects have been identified with respect to sustainable provision of water through water savings that would have otherwise been lost to leakage after having been abstracted at source. These effects are generally considered to be long term and permanent in nature.
Temporary use ban	Adverse																		No major adverse effects have been identified. A minor adverse effect has been identified in terms of promoting a sustainable economy due to the temporary use ban affecting some businesses (e.g. horticultural) as plant buying patterns may change during a drought.
	Beneficial																		Beneficial impacts include reducing the demand for water, resulting in securing the supply of water for customers/businesses. Reducing the demand for water will also have beneficial effects on maintaining surface water and groundwater levels/flows, sustainable management of abstractions and enabling long term improvements in water efficiency. Reducing water demand will also help to improve the resilience of water supplies to drought.
Drought Order to ban Non-Essential Use	Adverse																		No major adverse effects are predicted relating to the implementation of the ordinary drought order. Adverse effects associated with restriction of water use and impacts on recreation and tourism assets, and businesses/economy, may be minor and moderate respectively. They may also be minor adverse effects on heritage assets, such as visual impacts on parks and gardens and/or grounds of listed buildings. All adverse impacts identified are short-term and temporary.
	Beneficial																		Beneficial effects include a reduction in the demand for water and associated efficient resource use, maintenance of water

		SEA Topic																Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water				Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage	Landscape	
Objective		**1.1**	**1.2**	**2.1**	**2.2**	**2.3**	**3.1**	**3.2**	**4.1**	**4.2**	**4.3**	**4.4**	**5.1**	**6.1**	**6.2**	**6.3**	**7.1**	**8.1**	
																			flows/levels, maintenance of supply to consumers, and improving the resilience of water supplies to drought.
Emergency Drought Order	Adverse																		Significant adverse effects are predicted relating to the implementation of the emergency drought order, restricting water use with impacts for recreation and tourism assets, and businesses/economy (population and human health. Other adverse effects include potential minor impacts on heritage assets (e.g. visual impacts on parks and gardens and/or grounds of listed buildings).
	Beneficial																		Beneficial effects include a reduction in the demand for water and associated efficient resource use, maintenance of water flows/levels and maintenance of supply to consumers.

5.4 SUPPLY SIDE OPTIONS

A visual summary of SEA conclusions for each of the supply side options is provided in **Table 5-3**. The completed appraisal tables for each of the drought options are provided in **Appendix D**.

Eight of the nine supply side options in Thames Water's DP are within the London WRZ. KEN_0006 abstracts water from the Kennet Valley WRZ to supply the London WRZ and the Kennet WRZ. All of these supply side options are actions within existing licensed limits.

The LON_0013, LON_0020 and KEN_0006 options have the greatest beneficial effects, as they would deliver large volumes of water during drought events. These options all provide major beneficial effects with respect to SEA objectives regarding protecting and enhancing health and well-being, enabling access to essential services, and improving resilience to droughts.

Adverse impacts associated with supply side options typically relate to additional energy requirements, emissions and materials used to maintain supply. Groundwater abstraction drought options, for example LON_0013, LON_0002, LON_0005, LON_0017 and LON_0015, generally perform well against the SEA objectives when considering drought conditions, with typically only minor adverse effects identified due to increased energy requirements, emissions and materials used. There may be potential for effects on local groundwater levels and quality, however, it is assumed that the existing abstraction licences would not have been granted if these options resulted in unsustainable abstraction or the licences would have been identified on the Environment Agency's RSA programme.

KEN_0006 has potentially both beneficial and adverse effects, because during a drought (assessed here as short-term) it provides potential benefits against several SEA objectives due to positive impacts on flows in the River Kennet. However, over the long term, the drawdown of the groundwater levels for river augmentation has the potential for adverse impacts, and there could be a prolonged recovery period after KEN_0006 stops operating. The HRA Screening Report concluded that likely significant effects (LSEs) could not be ruled out on the River Lambourn SAC and the Kennet and Lambourn Floodplain SAC during operation of KEN_0006 and a Stage 2 Appropriate Assessment was, therefore, undertaken. On the basis that specific monitoring and mitigation measures are implemented during scheme operation (in consultation and agreement with Natural England and the Environment Agency), no adverse effects on the River Lambourn SAC and the Kennet and Lambourn Floodplain SAC are anticipated as the licence is now in place to enable augmentation of the SAC, therefore water levels could be maintained more effectively during drought conditions.

LON_0020, reduction in lowest residual flow on the Lower Thames Control Diagram at LON_0027 from 300Ml/d to 200Ml/d and KEN_0006 options have some moderate adverse effects. The LON_0020 is identified as causing moderate adverse impacts on material assets and resource use, and air and climate, due to its waste streams and emissions. The reduction in the lowest residual flow at LON_0027 (300Ml/d to 200Ml/d) option has moderate adverse impacts on water and biodiversity, fauna and flora due to deterioration in water quality in the LON_0011 and Upper Tideway that is known to occur in certain conditions when flow over LON_0027 falls below 400Ml/d. In addition, the KEN_0006 may have moderate adverse effects on other abstractors.

Table 5-3 Visual evaluation matrix summary for supply side options

		SEA Topic																Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water				Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage	Landscape	
Objective		**1.1**	**1.2**	**2.1**	**2.2**	**2.3**	**3.1**	**3.2**	**4.1**	**4.2**	**4.3**	**4.4**	**5.1**	**6.1**	**6.2**	**6.3**	**7.1**	**8.1**	
LON_0013	Adverse																		Adverse effects identified are associated with energy use and materials required for the re-abstraction of stored water and its treatment. Adverse effects are also likely with respect to emissions to air (air pollutants and greenhouse gas emissions) as a result of the additional pumping and treatment requirements.
	Beneficial																		Major beneficial effects are identified with respect to sustainable provision of a large quantity of water (at a rate of up to 220Ml/d) during periods of drought, and improving the resilience of water supplies to drought.
LON_0020	Adverse																		The scale of water abstraction, treatment including RO, and waste stream pumping required for implementation of this option will have moderate adverse effects on air emissions, moderate effects on resource consumption, and minor effects on greenhouse gas emissions. The treatment process would also have minor waste management impacts, due to discharge of brine from the desalination plant and generation of sludges from clarification and filtration units and RO membranes. Impacts should be short term and temporary, assuming the plant was only ramped up to full output in drought situations.
	Beneficial																		Use of the LON_0020 would have major beneficial effects regarding maintenance of supply reliability in drought conditions through provision of 0-75Ml/d supply, the availability of which is not influenced by the effects of drought.
LON_0002	Adverse																		Minor adverse effects may occur due to air emissions associated with energy use for the re-abstraction of stored water and its treatment. Negligible adverse impacts are possible with respect to greenhouse gas emissions, material use and groundwater quality. However, all adverse effects identified are short term and temporary.
	Beneficial																		Moderate beneficial effects are identified with respect to sustainable provision water (up to 15.1 Ml/d), thus providing improvements in the resilience of water supplies to drought.
Reduction in lowest residual flow on the Lower Thames Control Diagram at LON_0027	Adverse																		If implemented, the drought option would have moderate adverse effects on flows in the lowest reaches of the fluvial Thames, mainly in terms of velocity reduction. Freshwater flows to the upper Thames Tideway will reduce. Moderate adverse effects are predicted on water quality in the fluvial Thames (reduced dissolved oxygen saturation and reduced phosphate dilution), which may exacerbate water quality issues in the upper Tideway with the potential for moderate adverse effects. Moderate adverse effects are expected on a range of aquatic ecological receptors, such as macroinvertebrates, macrophytes

		SEA Topic																Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water				Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage	Landscape	
Objective		**1.1**	**1.2**	**2.1**	**2.2**	**2.3**	**3.1**	**3.2**	**4.1**	**4.2**	**4.3**	**4.4**	**5.1**	**6.1**	**6.2**	**6.3**	**7.1**	**8.1**	
from 300Ml/d to 200Ml/d																			and fish. The adverse effects include those associated with fish, including migration. Moderate adverse effects may occur on navigation.
	Beneficial																		If implemented, the drought option would have a major beneficial effect for populations and human health in terms of ensuring supply of water and other customers/businesses. Major beneficial effects are also expected in regard to improved resilience of water supplies to drought.
Earlier reduction in residual flow at LON_0027 on the Lower Thames Control Diagram	Adverse																		If implemented, the measure would result in minor adverse effects due to reduced flows passed forward over LON_0027 earlier and for longer than would be the case without implementation of the measure. Therefore, all identified effects are extensions of what could occur under baseline conditions. In addition to the flow impacts (mainly in the form of velocity reduction) in the fluvial LON_0011, minor adverse effects relate to the reduction in freshwater flows to the upper Thames Tideway. As a result there is potential for minor adverse effects regarding extended periods of water quality impacts in the fluvial Thames (reduced dissolved oxygen saturation and reduced phosphate dilution), which may exacerbate water quality issues in the upper Tideway. Minor adverse effects are expected on a range of aquatic ecological receptors, such as macroinvertebrates, macrophytes and fish, as a result of the extended periods of flow and water quality impacts. Minor adverse effects may occur on navigation as a result of extended periods of restrictions on lock use than would have occurred without the option.
	Beneficial																		If implemented, the measure would have moderate beneficial effects regarding ensuring supply of water to customers and businesses. Minor beneficial effects are also expected through improved resilience of water supplies to drought.
LON_0005	Adverse																		Negligible adverse effects identified are associated with energy use and materials required for the re-abstraction of stored water and its treatment. Adverse effects are also likely with respect to emissions to air (air pollutants and greenhouse gas emissions) as a result of the additional pumping and treatment requirements. There is also the potential for minor, temporary adverse effects on other abstractors, however, these effects are uncertain. All adverse effects are short to medium-term and temporary.
	Beneficial																		Moderate beneficial effects are identified with respect to sustainable provision of a moderate quantity of water (at a rate of up to 7.39Ml/d) during periods of drought, and minor improvements in the resilience of water supplies to drought.
LON_0017	Adverse																		Minor adverse, temporary effects identified are associated with emissions to air (air pollutants) as a result

		SEA Topic																	Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water				Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage	Landscape	
Objective		**1.1**	**1.2**	**2.1**	**2.2**	**2.3**	**3.1**	**3.2**	**4.1**	**4.2**	**4.3**	**4.4**	**5.1**	**6.1**	**6.2**	**6.3**	**7.1**	**8.1**	
																			of the additional pumping and treatment requirements and proximity to sensitive receptors (AQMAs).
	Beneficial																		Moderate beneficial effects are identified with respect to sustainable provision of water (at a rate of up to 4Ml/d) during periods of drought, and minor improvements in the resilience of water supplies to drought.
LON_0015	Adverse																		Minor adverse, temporary effects identified are associated with emissions to air (air pollutants) as a result of additional pumping and treatment requirements and proximity to sensitive receptors (AQMAs). There is also the potential for minor, temporary adverse effects on other abstractors, however, these effects are uncertain.
	Beneficial																		Moderate beneficial effects are identified with respect to maintaining public health and sustaining the economy, as are minor benefits due to improved resilience of water supplies to drought.
KEN_0006	Adverse																		Minor adverse short-term effects associated with extensive pumping is likely to lead to suppressed groundwater levels in the months following the drought, which might cause a reduction in groundwater levels at some sites, and discharge of groundwater may cause impacts to river water quality. Moderate adverse effects associated with the potential to impact on other abstractors. Negligible adverse impacts are anticipated on biodiversity, flora and fauna, as it was considered in the HRA Screening Report (which also documents the findings of the Stage 2 Appropriate Assessment which was undertaken) that the drought option is unlikely to have a significant effect on the designated features of the Kennet and Lambourn Floodplain SAC and the River Lambourn SAC as water levels could be maintained more effectively during drought conditions with the reduction of an existing licence and a new sluice to maintain flows to the SAC. Minor adverse effects due to air emissions associated with additional abstraction and proximity to nature conservation sites. All adverse effects are temporary.
	Beneficial																		Moderate beneficial effects on population and human health are anticipated due to maintenance of water supplies for customers and economic activity. Maintaining flow in watercourses during a prolonged drought may have a minor beneficial effect, and may also avoid declines in water quality in affected resources.

5.5 DROUGHT PERMIT/ ORDER OPTIONS

A visual summary of the findings of the SEA for each of the drought permit/order options in each WRZ is provided in **Table 5-4**. The completed appraisal tables for each of the drought options are provided in **Appendix D.**

5.5.1 London Water Resource Zone

The assessment of drought permit/order options in the London WRZ has highlighted the following options as having moderate to major adverse environmental effects:

- LON_0019 1
- LON_0019 2
- LON_0011 1
- LON_0011 2
- LON_0021

The LON_0011 has the highest number of major adverse effects in this WRZ. It would have major adverse effects on flows in the lowest reaches of the fluvial Thames. Major adverse effects are predicted on water quality in the fluvial Thames (reduced dissolved oxygen saturation and reduced phosphate dilution) which may exacerbate water quality issues in the upper Tideway. For biodiversity, major adverse effects are predominantly associated with adverse effects to fish, including migration. Major adverse effects may occur on navigation.

Two options, (LON_0011 and LON_0021) could have major significant adverse impacts on biodiversity, water flows and water quality, including the potential to cause adverse effects on the reaches of the River Darent.

The assessments of impacts on the environment associated with the LON_0019 drought permit are based on conservative assessments (worst case scenario) of the potential changes in the physical environment of the associated reaches of the River Darent. It should be noted that the AMP6 Low Flows Investigations of the Upper Darent concluded that there is no direct evidence to suggest that the abstraction at the current rates are reducing flows in the river during the periods when low flow stress occurs. LON_0019 1 (which is the conservative assessment) and LON_0019 2 would have moderate adverse effects on water quality in the River Darent. LON_0019 1 and 2 would have moderate adverse effects on biodiversity, predominantly associated with adverse effects to fish, including migration and moderate adverse effects on biodiversity associated with potential impacts to a nationally designated SSSI

LON_0021 would have a major adverse hydrological effect, as under a worst-case scenario, Waddon ponds may dry up when they would otherwise not have done so without a drought permit.

The assessment highlights options with lower impacts that could be selected in preference for this WRZ. These comprise, LON_0003, LON_0022 and Increase in M2 annual licence drought permits. However, these options provide less water than the LON_0011 drought permit and the Increase in M2 annual licence drought permit would only become available during the drought recovery phase of the drought.

The following options also have moderate to major beneficial effects including those associated with maintaining public water supplies during times of drought:

- LON_0019 1
- LON_0019 2
- LON_0011
- LON_0003
- LON_0022
- Increase in M2
- LON_0021

Major beneficial effects are identified for LON_0011 for maintenance of water supplies and air and climate due to drought permits/orders being a key component of the final DP, the aim of which is to ensure resilience of water supplies to drought. The increase in M2 annual licence also has major beneficial effects for maintenance of supplies and water provisioning.

5.5.2 SWOX Water Resource Zones

The assessment of drought permit/order options in the SWOX WRZ has highlighted the following options as having moderate to major adverse significant environmental effects:

- SWOX_0002 1
- SWOX_0002 2
- SWOX_0009
- SWOX_0010 1
- SWOX_0010 2
- SWOX_0006
- SWOX_0001 1
- SWOX_0001 2
- SWOX_0005

Of these, major adverse effects are identified for SWOX_0002 1 and SWOX_0002 2 for river flows; SWOX_0006 for river flows and water quality; SWOX_0001 2 for river flows; and SWOX_0005 for river flows and water quality. SWOX_0005 and SWOX_0006 have the highest number of major adverse effects.

The assessment highlights options with lower impacts that could be selected in preference for this WRZ, and these would normally be implemented first. These comprise SWOX_0011 and SWOX_0007 that would have negligible to minor adverse effects.

Minor to moderate beneficial effects, including those associated with maintaining public water supplies during times of drought, are identified for:

- SWOX_0002 1
- SWOX_0002 2
- SWOX_0009
- SWOX_0010 1
- SWOX_0010 2
- SWOX_0006
- SWOX_0001 1
- SWOX_0001 2
- SWOX_0007
- SWOX_0005
- SWOX_0011

None of the options in this WRZ have major beneficial effects.

5.5.3 Kennet Valley Water Resource Zone

The assessment of drought permit/order options in the Kennet Valley WRZ has highlighted the following options as having moderate to major significant adverse environmental effects:

- KEN_0003
- KEN_0004
- KEN_0002

Of these, major adverse effects are identified for KEN_0004 on water with respect to water quality and KEN_0002 for hydrology.

The assessment highlights one option with lower impacts that could be selected in preference for this WRZ and this is KEN_0005, although this option provides a smaller volume of water.

Moderate to major beneficial effects including those associated with maintaining public water supplies during times of drought, for:

- KEN_0002
- KEN_0003
- KEN_0004
- KEN_0005

None of the options in this WRZ have major beneficial effects.

5.5.4 Guildford Water Resource Zone

There are two drought permit/order options in the Guildford WRZ (GUI_0001 and GUI_0006). There are moderate and minor adverse effects associated with GUI_0001. Moderate effects are associated with biodiversity and hydrology and water quality. However, GUI_0006 has only negligible adverse effects.

Both options have minor to moderate beneficial effects.

5.5.5 SWA and Henley Water Resource Zones

There are two drought permit/order options in the SWA and Henley WRZ. SWA_0005 has major and moderate adverse effects. Major adverse for hydrology and moderate for water quality and biodiversity. HEN_0001/HEN_0002 has negligible adverse effects.

All options have minor to moderate beneficial effects.

Table 5-4 Visual evaluation matrix summary for drought permit/ order options

		SEA Topic																Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water				Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage	Landscape	
Objective		**1.1**	**1.2**	**2.1**	**2.2**	**2.3**	**3.1**	**3.2**	**4.1**	**4.2**	**4.3**	**4.4**	**5.1**	**6.1**	**6.2**	**6.3**	**7.1**	**8.1**	
London WRZ																			
LON_0019 1	Adverse																		The hydrological impacts in the EAR are moderate in Reach 1 and minor in Reach 2, however, the high sensitivity of the waterbody results in major adverse short-term effects predicted due to reductions of flows, velocities and levels in the River Darent. Reach 1 of the River Darent is considered to be medium sensitivity to changes in water quality and therefore the overall risk is moderate adverse. The feasibility of the surface water abstraction at Sevenoaks Wildfowl Reserve may being limited with the drought order in place, a moderate adverse short-term impact. Moderate adverse short-term effects are anticipated on the Sevenoaks Gravel Pits SSSI due to reduction in lake levels, potential impacts on breeding birds, and potential reduction in suitability or distribution of habitats which support Cordulia aenea. The significance of impacts on NERC fish species were identified as moderate for brown trout and eels with a minor impact for sea trout based on fragmentation of habitats, with reduced river flows inhibiting migration. Moderate adverse impacts on WFD status are likely based on the impact of the drought option on fish. Overall impacts on biodiversity are assessed as major adverse due to the high sensitivity of ecological receptors, however, the residual effect is assessed as moderate as mitigation can reduce the magnitude of impacts. Minor adverse short-term effects may occur on landscape values, as a significant reduction in river or lake level will have a visual impact on the landscape setting of the area and the Darent Valley Path National Trail, which may be noticeable by walkers. The assessments of impacts on the environment associated with the LON_0019 drought permit are based on conservative assessments (worst case scenario) of the potential changes in the physical environment of the associated reaches of the River Darent. It should be noted that the AMP6 Low Flows Investigations of the Upper Darent concluded that there is no direct evidence to suggest that the abstraction at the current rates are reducing flows in the river during the periods when low flow stress occurs.
	Beneficial																		Beneficial effects associated with the maintenance of essential public water supplies and improved resilience of water supplies to drought.
LON_0019 2	Adverse																		The hydrological impacts in the EAR are moderate in Reach 1 and minor in Reach 2, however, the high sensitivity of the waterbody results in major adverse short-term effects predicted due to reductions of flows, velocities and levels in the River Darent. Reach 1 of the River Darent is considered to be medium sensitivity to changes in water quality and therefore the overall risk is moderate adverse. The feasibility of the surface water abstraction at Sevenoaks Wildfowl Reserve may being limited with the drought order in place, a moderate adverse short-term impact. Moderate adverse short-term effects are anticipated on the Sevenoaks Gravel Pits SSSI due to reduction in lake levels, potential impacts on breeding birds, and potential reduction in suitability or distribution of habitats which support Cordulia aenea. The significance of impacts on NERC fish species were identified as moderate for brown trout and eels with a minor impact for sea trout based on fragmentation of habitats, with reduced river flows inhibiting migration. Moderate adverse impacts on WFD status are likely based on the impact of the drought option on fish. Overall impacts on biodiversity are assessed as major adverse due to the high sensitivity of ecological receptors, however, the residual effect is assessed as moderate as mitigation can reduce the magnitude of impacts. Minor adverse short-term effects may occur on landscape values,

		SEA Topic																Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water				Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage	Landscape	
Objective		**1.1**	**1.2**	**2.1**	**2.2**	**2.3**	**3.1**	**3.2**	**4.1**	**4.2**	**4.3**	**4.4**	**5.1**	**6.1**	**6.2**	**6.3**	**7.1**	**8.1**	
																			as a significant reduction in river or lake level will have a visual impact on the landscape setting of the area and the Darent Valley Path National Trail, which may be noticeable by walkers. The assessments of impacts on the environment associated with the LON_0019 drought permit are based on conservative assessments (worst case scenario) of the potential changes in the physical environment of the associated reaches of the River Darent. It should be noted that the AMP6 Low Flows Investigations of the Upper Darent concluded that there is no direct evidence to suggest that the abstraction at the current rates are reducing flows in the river during the periods when low flow stress occurs.
	Beneficial																		Beneficial effects associated with the maintenance of essential public water supplies during times of drought, and improved resilience to the drought effects.
LON_0011 1	Adverse																		If implemented, the drought permit would have major adverse effects on flows in the in the lowest reaches of the fluvial Thames, mainly in terms of velocity reduction. Adverse effects are predicted on water quality in the fluvial Thames (reduced dissolved oxygen saturation and reduced phosphate dilution) which may exacerbate water quality issues in the upper Tideway with the potential for major adverse effects. Minor to major adverse effects are expected on a range of aquatic ecological receptors, such as macroinvertebrates, macrophytes, fish and algae. The major adverse effects are predominantly associated with adverse effects to fish, including migration. Adverse effects also identified with respect to Langham Pond SSSI, Dumsey Meadow SSSI and Syon Park SSSI. Major adverse effects may occur on navigation. The combination of maintenance of water levels, restrictions on lock use, and small restrictions regarding navigability in the Thames Tideway would result in major adverse effects on boats that are navigating between the Tideway and the fluvial River Thames.
	Beneficial																		If implemented, the drought permit would have a major beneficial effect for populations and human health in terms of ensuring supply of water and other customers/businesses. Major beneficial effects are also expected in regard to improved resilience of water supplies to drought.
LON_0011 2	Adverse																		If implemented, the drought permit would have major adverse effects on flows in the lowest reaches of the fluvial Thames, mainly in terms of velocity reduction. Freshwater flows to the upper Thames Tideway will reduce, potentially completely. Adverse effects are predicted on water quality in the fluvial Thames (reduced dissolved oxygen saturation and reduced phosphate dilution) which may exacerbate water quality issues in the upper Tideway with the potential for major adverse effects. Minor to major adverse effects are expected on a range of aquatic ecological receptors, such as macroinvertebrates, macrophytes, fish and algae. The major adverse effects are predominantly associated with adverse effects to fish, including migration. Adverse effects also identified with respect to Langham Pond SSSI, Dumsey Meadow SSSI and Syon Park SSSI. Major adverse effects may occur on navigation. The combination of maintenance of water levels, restrictions on lock use, and small restrictions regarding navigability in the Thames Tideway would result in major adverse effects on boats that are navigating between the Tideway and the fluvial River Thames.
	Beneficial																		If implemented, the drought permit would have a major beneficial effect for populations and human health in terms of ensuring supply of water and other customers/businesses. Major

		SEA Topic																Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water				Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage	Landscape	
Objective		**1.1**	**1.2**	**2.1**	**2.2**	**2.3**	**3.1**	**3.2**	**4.1**	**4.2**	**4.3**	**4.4**	**5.1**	**6.1**	**6.2**	**6.3**	**7.1**	**8.1**	
																			beneficial effects are also expected in regard to improved resilience of water supplies to drought.
LON_0003	Adverse																		Hydrological impacts on two reaches of the River Cray are considered to be negligible, as no reduction in the surface (fresh) water contribution to the tidal reaches of the lower Cray are expected as a result of increased abstraction. Other effects associated with the drought plan option are also largely negligible, excluding a minor, short-term effect associated air emissions due to increased energy use, given the area of influence is within an AQMA.
	Beneficial																		Moderate beneficial impacts are expected with regard to ensuring supply of water to local population and other customers/businesses. There is also likely to be beneficial impacts associated with improved resilience of water supplies to drought.
LON_0022	Adverse																		Hydrological impacts on Reach 1 of the River Cray are uncertain and assumed to be negligible, and effects on Reach 2 are also negligible as no reduction in the surface (fresh) water contribution to the tidal reaches of the lower Cray is expected as a result of increased abstraction. Other effects associated with the drought plan option are also largely negligible, excluding a minor, short-term effect associated air emissions due to increased energy use, given the area of influence is within an AQMA.
	Beneficial																		Moderate beneficial impacts are expected with regard to ensuring supply of water to local population and other customers/businesses. There is also likely to be beneficial impacts for associated with improved resilience of water supplies to drought.
M2 Licence	Adverse																		Adverse effects identified are limited to negligible, temporary adverse effects from emissions of air pollutants and greenhouse gases associated with additional water pumping and treatment requirements.
	Beneficial																		Major beneficial effects are identified with respect to the population and human health, water and air and climate. These relate to helping with the sustainable provision of a large quantity of water (at a rate of 91Ml/d) during periods of drought. The drought option achieves this by enabling recovery of storage in the Thames reservoirs after a period of summer drought. This will help ensure that the reservoirs can be full by the end of the calendar year rather than being restricted by the annual total abstraction limit in case there is a drought period following on in the next year. Abstractions would still be restricted when flows are medium to low (as per normal operations) and therefore the benefits are achieved with no adverse effects on environmental features or other abstractors.
LON_0021	Adverse																		Under a worst-case scenario, Waddon Ponds may dry up (for up to 3 months) when they would otherwise not have without a drought permit (significant adverse effect on water levels/flows). With reduction in through-flow in Waddon Ponds, there is a risk of increased water temperature and reduction in dissolved oxygen saturation. Moderate adverse effects are also identified with respect to the River Wandle downstream of the ponds, where the drought permit would extend the recovery of levels and flows by up to one month. These hydrological effects could result in major adverse, medium-term effects with respect to biodiversity, including major adverse impacts on European eel (NERC fish species), moderate adverse effects to brown trout and barbel and overall fish communities. Appropriate mitigation may reduce the magnitude of effect. Moderate to minor adverse effects on the Wilderness Island, Spencer Road Wetlands, and Wandle Valley Wetland LNRs are anticipated. Minor, temporary adverse effects were identified on the landscape values

		SEA Topic																Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water				Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage	Landscape	
Objective		**1.1**	**1.2**	**2.1**	**2.2**	**2.3**	**3.1**	**3.2**	**4.1**	**4.2**	**4.3**	**4.4**	**5.1**	**6.1**	**6.2**	**6.3**	**7.1**	**8.1**	
																			associated with Waddon Ponds, which form a local amenity feature in the London Borough of Croydon and an essential part of the landscape setting and character of the Wandle trail which is valued by walkers.
	Beneficial																		Moderate beneficial effects are expected due to provision of additional water supply. There are also likely to be minor beneficial impacts associated with improved resilience of water supplies to drought.
SWOX WRZ																			
SWOX_00021	Adverse																		Major adverse effect on the upper reach of the River Churn, moderate adverse, short-term effects on the middle and lower reach of the River Churn. There are risks of the permit drying parts of the watercourse that would otherwise remain with perceptible flow as well as flow reductions elsewhere in the impacted reaches. Post-drought permit, flow reductions would be short-term and localised. Moderate, adverse, short-term effects on NERC fish species are possible, as are uncertain effects on the nationally designated site Cotswold Water Park SSSI as offtakes from the River Churn support the macrophyte community at the site (uncertainty surrounds the water level management practice at the site).
	Beneficial																		Beneficial effects associated with the drought option include maintaining essential public water supplies during times of drought.
SWOX_00022	Adverse																		Major adverse, short-term effects are predicted for flow hydraulics in two reaches (one reach of the River Churn and one reach of the River Frome). Elsewhere impacts range from moderate to minor. There are risks of the permit drying parts of the watercourse that would otherwise remain with perceptible flow as well as flow reductions elsewhere in the impacted reaches. Post-drought permit, there is a risk of additional drying or flow reductions during the later part of the recovery period. With an overall assessment of major adverse, short term effects identified. Moderate, adverse, short-term effects on NERC fish species are possible, as are uncertain effects on the nationally designated site Cotswold Water Park SSSI as offtakes from the River Churn support the macrophyte community at the site (uncertainty surrounds the water level management practice at the site). Negligible, adverse, short-term landscape and visual effects may occur as the drought option is located in Cotswolds National Landscape. However due to the natural drying of the reaches in natural drought conditions, it is unlikely that drought permit implementation will have significant impacts on the local distinctiveness of the landscape. Effects are similar to those associated with the SWOX_00021 option.
	Beneficial																		Beneficial effects associated with the drought option include maintaining essential public water supplies during times of drought.
SWOX_0009	Adverse																		Moderate to minor adverse, short-term effects are predicted on the river as they may remain dryer for longer as result of the drought option. This would result in moderate adverse effects to water quality, due to reduced dissolved oxygen saturation and increased SRP concentration. Minor adverse, short-term impacts on the feasibility of some other groundwater abstractions in the study area are possible. Moderate adverse, short-term effects on NERC fish species and on the Down Ampney Pits KWS are anticipated due to reduction in abundance or distribution of species supported by the designated site or deterioration in habitat quality, causing a decline in ecological status of the site.

		SEA Topic																Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water				Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage	Landscape	
Objective		**1.1**	**1.2**	**2.1**	**2.2**	**2.3**	**3.1**	**3.2**	**4.1**	**4.2**	**4.3**	**4.4**	**5.1**	**6.1**	**6.2**	**6.3**	**7.1**	**8.1**	
	Beneficial																		Beneficial effects include those associated with maintaining essential public water supplies during times of drought.
SWOX_0010 (1)	Adverse																		Moderate adverse, short-term effects are predicted on the impacted reaches as they may remain dryer for longer as result of the drought option and experience flow reductions. This would result in moderate short-term effects to water quality as dissolved oxygen saturation levels and SRP concentrations may be affected by lower river flow. Minor adverse, short-term effects on NERC fish species are predicted, comprising increased stress and predation on species in refuges as a result of delay in recovery of flows, reduction in species abundance or distribution as a result of changes in water quality, and impacts on spawning potential. Minor adverse effects on the local designated site Down Ampney Pits KWS may occur, however it is resilient to the impacts of desiccation as movement of water from the aquifer to surface waterbodies often ceases in dry summers.
	Beneficial																		Beneficial effects include maintenance of essential public water supplies during times of drought.
SWOX_0010 (2)	Adverse																		Moderate adverse, short-term effects are predicted for water as a number of reaches may remain dryer for longer as result of the drought option. This would result in moderate short-term effects to water quality as SRP concentrations may be affected by lower river flow. Minor adverse, short-term effects on NERC fish species are predicted, comprising increased stress and predation on species in refuges as a result of delay in recovery of flows, reduction in species abundance or distribution as a result of changes in water quality, and impacts on spawning potential. Minor adverse effects on the local designated site Down Ampney Pits KWS may occur, however it is resilient to the impacts of desiccation as movement of water from the aquifer to surface waterbodies often ceases in dry summers.
	Beneficial																		Beneficial effects include maintenance of essential public water supplies during times of drought.
SWOX_0006	Adverse																		Moderate adverse, short-term effects with respect to Biodiversity, flora and fauna including moderate adverse effects regarding INNS, fish community and moderate risk of short-term deterioration to the fish component of two WFD waterbodies. Moderate adverse, short-term effects to recreational use of the River Thames due to potential effects to navigation and angling. Major adverse, short-term effects to water were identified, including major reductions in velocity and high risk to water quality in both the mainstem of the River Thames and distributaries. Discharge pressures (STW discharges) pose a risk to water quality in both the mainstem of the River Thames and distributaries (this includes risks associated with the back pumping element of the scheme).
	Beneficial																		Moderate beneficial effects are expected due to provision of additional water supply, and minor effects are associated with improved resilience of water supplies to drought.
SWOX_00011	Adverse																		The flow reductions in the River Kennet would manifest as a limited and localised reduction in levels and velocities during drought permit implementation, with rapid amelioration of impacts following cessation. Impacts are anticipated to be similar during both a summer and winter permit. Moderate adverse, short-term effects are anticipated with respect to biodiversity, flora and fauna, due to the potential for impacts on nationally designated River Kennet SSSI. Negligible adverse effects predicted for the Kennet and Lambourn SAC. Minor adverse effects were assessed for other ecological and WFD status receptors, including fish and macroinvertebrates. Minor adverse effects on water quality in the River Kennet are anticipated due to the drought option presenting a low risk to SRP associated with the rivers

		SEA Topic																Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water				Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage	Landscape	
Objective		**1.1**	**1.2**	**2.1**	**2.2**	**2.3**	**3.1**	**3.2**	**4.1**	**4.2**	**4.3**	**4.4**	**5.1**	**6.1**	**6.2**	**6.3**	**7.1**	**8.1**	
																			inability to buffer nutrient pressures under low flow conditions and the presence of one significant discharge permit.
	Beneficial																		Beneficial impacts include ensuring supply of water to local population and other customers/businesses. There are also likely to be beneficial effects through reducing vulnerability to drought.
SWOX_0001 2	Adverse																		The flow reductions in the River Kennet would manifest as moderate reductions in levels and velocities during drought permit implementation. Post implementation, limited short-term and localised river flow reductions would continue during the early part of the recovery period for no longer than two months. Impacts are anticipated to be similar during both a summer and winter permit. Major adverse, short-term effects are anticipated with respect to biodiversity, flora and fauna, due to the potential for impacts on nationally designated River Kennet SSSI. Moderate adverse effects were assessed for NERC fish species such as brown/sea trout and Southern Iron Blue Mayfly. Minor impacts on WFD status for Middle Kennet (Marlborough to Hungerford) (GB106039023173) and Middle Kennet (Hungerford to Newbury) (GB106039023174) based on the impact of the drought option on fish, macroinvertebrates and macrophyte communities and negligible impact on diatoms.
	Beneficial																		Moderate beneficial effects are expected due to provision of additional water supply, and also minor beneficial effects associated with improving the resilience of water supplies to drought.
SWOX_0007	Adverse																		There are negligible hydrological impacts associated with SWOX_0007 drought permit implementation. No impacts on biodiversity, geomorphology, water quality and other abstractors are expected. There may be minor adverse effects due to emissions to air associated with additional abstraction and proximity to nature conservation sites. All adverse effects identified are short-term and temporary.
	Beneficial																		Minor beneficial impacts are expected with regard to ensuring supply of water to local population and other customers/businesses. There are also likely to be beneficial impacts associated with improving the resilience of water supplies to drought.
SWOX_0005	Adverse																		Short-term, temporary effects on water levels and flows are anticipated, comprising a significant reduction in flow on Reach 1 of Letcombe Brook and associated water quality effects. This is likely to contribute to moderate short-term, temporary effects on biodiversity, flora and fauna (in particular effects on NERC species - brown trout). Other short-term adverse effects anticipated include changes to the distribution and abundance of invasive species (Least duckweed), declines in water quality (with regards to SRP), and geomorphological changes to sediment dynamics, connectivity and variability in usable habitat. There will also be short-term drying-up of Letcombe Brook along existing trails and footpaths, and minor increases in energy use and waste generation due to abstraction and treatment of additional water. Negligible, short-term increases in air emissions are expected to accompany increases in energy use.
	Beneficial																		Beneficial effects include ensuring water supply to the local population and other customers/businesses. There are also likely to be beneficial effects associated with improving the resilience of water supplies to drought.
SWOX_0011	Adverse																		Minor adverse, short-term effects are anticipated with respect to biodiversity, flora and fauna. Impacts on fish may occur due limited and localised reductions in flow in the River Og. The Middle Kennet water body is considered at minor risk of short-term deterioration of WFD

		SEA Topic																Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water				Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage	Landscape	
Objective		**1.1**	**1.2**	**2.1**	**2.2**	**2.3**	**3.1**	**3.2**	**4.1**	**4.2**	**4.3**	**4.4**	**5.1**	**6.1**	**6.2**	**6.3**	**7.1**	**8.1**	
																			status for macroinvertebrates and fish. Minor adverse, short-term effects on angling and recreation are possible due to impacts on fish communities. Minor adverse, short-term effects to water are likely as the abstraction will cause flow reductions in the River Og. Flow changes in the River Kennet are considered negligible.
	Beneficial																		Minor beneficial effects are expected due to provision of additional water supply. Minor beneficial effects are associated with improving the resilience of water supplies to drought.
Kennet WRZ																			
KEN_0003	Adverse																		Four reaches will be impacted, three on the River Kennet all identified as having negligible hydrological impacts, and one on Holy Brook, identified as having a minor impact. The impact on Holy Brook would include reductions in levels and wetted width in isolated areas where channel banks are shallower, while this would not occur on the River Kennet as it is level-controlled. Moderate effects on water quality in Holy Brook may occur, comprising elevated SRP concentrations that may downgrade diatom and macrophyte status downstream. The STW_0007 may present moderate a water quality pressure to the River Kennet downstream of the confluence with Foudry Brook, due to influences on ammonia, dissolved oxygen saturation and SRP. Minor decline in habitat suitability for sensitive flora and fauna species may occur, as may moderate adverse effects due to air emissions associated with increased abstraction. Moderate effect on air emissions. Holy Brook forms part of the landscape and visual amenity value of Southcote Linear Park, and impacts on river levels may adversely impact the visual amenity of the park for walkers and those who visit the park. However, all adverse effects identified are short-term and temporary, and not expected to extend beyond six months.
	Beneficial																		Moderate beneficial effects include ensuring supply of water to local population and other customers/businesses, and minor benefits associated with improving the resilience of water supplies to drought.
KEN_0004	Adverse			**None**				**None**				**None**				**None**			Minor hydro-ecological effects are anticipated on the River Pang from the Blue Pool to the confluence with River Thames and in Sulham Brook. Major effects on water quality in Sulham Brook are expected due to low dissolved oxygen saturation and reduced dilution of STW_0006 discharges. Sulham Brook has high sensitivity for WFD status. Minor risks to geomorphology are possible, associated with reduced flows and variability in usable habitat and connectivity (Reach 2 only). Minor, short-term impacts on the Sulham and Tidmarsh Woods and Meadows SSSI, NERC fish species (brown trout and European eel) and notable county and regional level species (bullhead and brook lamprey) are possible.
	Beneficial																		Moderate beneficial impacts are expected with regard to ensuring supply of water to local population and other customers/businesses. There is also likely to be a minor beneficial effect associated with improving the resilience of water supplies to drought.
KEN_0005	Adverse																		Overall, adverse effects associated with this drought option are minor to negligible and temporary. There would be minor adverse effects associated with emissions to air due to the abstraction of an additional 4Ml/d. Remaining adverse effects would be negligible, as they are associated with negligible hydrological effects and the use of energy for the additional abstraction.
	Beneficial																		There would be moderate beneficial effects associated with provision of water supplies. Also, minor beneficial effects due to improving the resilience of water supplies to drought.

		SEA Topic																Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water				Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage	Landscape	
Objective		**1.1**	**1.2**	**2.1**	**2.2**	**2.3**	**3.1**	**3.2**	**4.1**	**4.2**	**4.3**	**4.4**	**5.1**	**6.1**	**6.2**	**6.3**	**7.1**	**8.1**	
KEN_0002	Adverse																		If implemented, the drought permit would have a major hydrological impact on Holy Brook between the KEN_0007 and its confluence with the River Kennet. Impacts will manifest as a reduction in lowest flows of up to 40%, along with reductions in velocities, levels and wetted widths. There would be a moderate water quality risk for SRP during the drought permit implementation. Habitat availability would be negatively affected through reductions in loss of marginal habitats in localised areas, adversely affecting macroinvertebrates, macrophytes and phytobenthos, and fish. Holy Brook forms part of the landscape and visual amenity value of Southcote Linear Park and impacts on river levels may adversely impact the visual amenity of the park for walkers and those who visit the park. However, all adverse effects identified are short-term and temporary, and not expected to extend beyond six months.
	Beneficial																		If implemented the drought permit would have a minor beneficial hydrological impact on the River Kennet from the KEN_0007 to the KEN_0002 WTW intake. Flows would be increased by 20 Ml/d for the duration that the drought permit is implemented. Moderate beneficial impacts associated with ensuring supply of water to local population and other customers/businesses. Minor benefits associated with improving the resilience of water supplies to drought. An increase in flow at a time of natural drought will also help to alleviate the impacts of natural drought on macrophytes, fish, mammals and birds in the habitats of the River Kennet.
Guildford WRZ																			
GUI_0001	Adverse																		Moderate adverse effects on water quality may occur due to elevated SRP concentrations, and moderate adverse hydrological effects are expected on the two reaches of Law Brook. Moderate adverse effects on NERC species (brown trout) are anticipated, as are minor moderate adverse effects due to a potential increase in invasive macroinvertebrates. There would be minor impacts on angling at ponds along Law Brook, and minor adverse effects associated with air and greenhouse gas emissions. Minor geomorphological changes are also expected. Adverse effects are largely limited to Reach 2 (Law Brook from Ford Cress Beds to confluence with River Tillingbourne) and are predominantly short-term and temporary.
	Beneficial																		Moderate beneficial effects are expected due to provision of additional water supply. Minor beneficial effects associated with improving the resilience of water supplies to drought.
GUI_0006	Adverse																		Flow reductions associated with implementation of the drought permit on the River Wey upstream of the River Tillingbourne will be negligible. Downstream impacts would be proportionally less with flow contributions coming from the River Tillingbourne and Guildford STW. Negligible adverse hydrological impacts were identified, impacts on geomorphology, water quality and other abstractors are also expected to be negligible.
	Beneficial																		Moderate beneficial impacts are expected with respect to ensuring supply of water to local population and other customers/businesses. There is also likely to be minor beneficial impacts associated with improving the resilience of water supplies to drought.
SWA WRZ																			
SWA_0005	Adverse																		Major adverse effects have been identified in relation to a reduction in flow in the River Wye Reach 2 with moderate adverse effects identified for Reach 3 with flow in the river being at its lowest level during drought permit operation. Moderate adverse effects relate to the impacts of this low flow on biodiversity (including loss of habitat and spawning areas affecting

		SEA Topic																Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water				Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage	Landscape	
Objective		**1.1**	**1.2**	**2.1**	**2.2**	**2.3**	**3.1**	**3.2**	**4.1**	**4.2**	**4.3**	**4.4**	**5.1**	**6.1**	**6.2**	**6.3**	**7.1**	**8.1**	
																			Brown Trout), and water quality (with risks for SRP in Reach 2 and Reach 3). Minor adverse impacts have also been identified in relation to non-native invasive species (low flows and loss of habitat), and geomorphology (effects in shallow sections of reaches). However, all adverse effects identified are short-term and temporary, and not expected to extend beyond six months.
	Beneficial																		Beneficial impacts include ensuring supply of water to local population and other customers/businesses. There is also likely to be beneficial impacts associated with improving the resilience of water supplies to drought.
Henley WRZ																			
HEN_0001/ HEN_0002	Adverse																		Negligible adverse effects are predicted for this drought option and no construction is proposed.
	Beneficial																		Beneficial effects include maintained of essential public water supplies during times of drought. There is also likely to be beneficial impacts associated with improving the resilience of water supplies to drought.

5.6 'IN EXTREMIS' DROUGHT PERMIT/ ORDER OPTIONS

A visual summary of the findings of the SEA for each of the *in extremis* drought permit/order options in the Thames Water supply area is provided in **Table 5-4**. The completed appraisal tables for each of the drought options are provided in **Appendix D.**

As outlined in Section 1.4.3.5, only options with sufficient existing information or assessments have been included in the assessment below. Further updates or new draft EARs for these options are expected between the draft and final DP submission. The assessments are presented here for completeness, and this section will be reviewed and revised as necessary prior to final submission of the DP

The assessment of *in extremis* drought permit/order options has highlighted the following options as having moderate to major adverse significant environmental effects:

- SWOX_0004
- KEN_0001 (1)
- SWOX_0012
- Of these, major adverse effects are identified for SWOX_0004 for river flows, water quality and biodiversity; SWOX_0012 for biodiversity; and, KEN_0001 (1) for sustainable management of abstractions. SWOX_0004 has the highest number of major adverse effects.

The assessment highlights options with lower impacts that could be selected in preference for this WRZ, and these would normally be implemented first. This includes SWOX_0003 which would have negligible to minor adverse effects.

Minor to moderate beneficial effects, including those associated with maintaining public water supplies during times of drought, are identified for:

- SWOX_0004
- KEN_0001 (1)
- SWOX_0012

None of the options in this WRZ have major beneficial effects.

		SEA Topic																Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water				Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage	Landscape	
Objective		**1.1**	**1.2**	**2.1**	**2.2**	**2.3**	**3.1**	**3.2**	**4.1**	**4.2**	**4.3**	**4.4**	**5.1**	**6.1**	**6.2**	**6.3**	**7.1**	**8.1**	
SWOX WRZ																			
SWOX_0012	Adverse																		Major adverse, short-term effects are anticipated with respect to biodiversity, flora and fauna. Moderate impacts on the designated features and conservation objectives for the nationally important River Kennet SSSI result in Major adverse impact to biodiversity. Impacts on fish may occur due to an extension in duration of River Og being dry, and a reduction in flows in the River Kennet. Changes in flow in the River Kennet also have potential for moderate adverse, short-term effects on macroinvertebrates. The Middle Kennet water body is considered at moderate risk of short-term deterioration of WFD status for macroinvertebrates and fish. A minor adverse, short-term effect on angling and recreation relates is possible due to impacts on fish communities. Moderate adverse, short-term effects to water are likely as the abstraction will cause the River Og to remain dry for longer. Flow changes in the River Kennet are considered minor, however there is a high risk to water quality associated with the Marlborough STW discharge due to reduced dilution in the River Kennet during drought permit implementation.
	Beneficial																		Beneficial effects associated with the drought option include maintaining essential public water supplies during times of drought.
SWOX_0003	Adverse																		Potential adverse effects identified relate to a minor reduction in flow in the River Coln, and associated minor impacts on NERC species, WFD status, the geomorphology of the reaches, and location within AONB. There may also be minor adverse temporary effects related to construction. All impacts identified will be short-term and temporary.
	Beneficial																		Beneficial impacts have been identified primarily through ensuring supply of water to local population and other customers/businesses. There are also likely to be beneficial impacts associated with improving the resilience of water supplies to drought.
SWOX_0004	Adverse																		Major reductions in flows are likely to occur in Mill Brook and Cholsey Brook during drought option implementation, resulting in major adverse impacts on water quality (in particular south of South Moreton and STW_0002), but also resulting in effects on NERC species (spawning fish - brown trout). A minor adverse effect is anticipated in relation to Blewbury Pond during drought option operation, which has high amenity for local residents and visitors. Other adverse effects relate to the impacts associated with low flow, including increase in invasive flora and geomorphological impacts. All adverse impacts are considered to be short term and temporary.
	Beneficial																		Beneficial impacts comprise ensuring supply of water to local population and other customers/businesses. There are also likely to be beneficial effects associated with improving the resilience of water supplies to drought.
KEN_0001 (1)	Adverse																		Moderate adverse effects are identified for biodiversity and on water quality. Effects include low groundwater flows being exacerbated, resulting in the River Pang remaining drier for longer, and resulting impacts on water quality (SRP and dissolved oxygen saturation levels), NERC species (Ranunculus spp. brown trout, fine-lined pea mussel), macroinvertebrates and fish. There is the potential for major adverse impacts in relation to other abstractors, in particular a number of significant groundwater abstractions that are used by the EA for abstraction under the KEN_0006 (upstream of KEN_0001, totalling 56Ml/d), which may affect the feasibility of the abstraction. Minor effects include those on angling.

		SEA Topic																Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water				Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage	Landscape	
Objective		**1.1**	**1.2**	**2.1**	**2.2**	**2.3**	**3.1**	**3.2**	**4.1**	**4.2**	**4.3**	**4.4**	**5.1**	**6.1**	**6.2**	**6.3**	**7.1**	**8.1**	
	Beneficial																		Beneficial impacts include ensuring supply of water to local population and other customers/businesses. There is also likely to be beneficial impacts associated with improving the resilience of water supplies to drought.

5.7 HABITATS REGULATIONS ASSESSMENT SCREENING REPORT OF DROUGHT PLAN SUMMARY

Thames Water has undertaken the first stage in the HRA process, Screening, on its DP options list. It has been carried out in parallel with the SEA and is reported separately in the HRA Screening Report. The screening stage establishes whether any schemes have the potential for a Likely Significant Effect (LSE) on the integrity of a Habitat site.

Thames Water has undertaken the first stage in the HRA process, Screening, on its DP options list. It has been carried out in parallel with the SEA and is reported separately in the HRA Screening Report. The screening stage establishes whether any schemes have the potential for a Likely Significant Effect (LSE) on the integrity of a Habitat site. No LSEs on Habitat sites are anticipated for the majority of the drought options in Thames Water's Draft DP 2027, either alone or in combination with other drought options. The exception was for the KEN_0006 supply-side drought option where HRA screening identified LSEs due to the uncertainties regarding the potential effects on the River Lambourn SAC and the Kennet and Lambourn SAC. This drought option was, therefore, subject to a Stage 2 Appropriate Assessment, where the objectives were to establish if the option could meet the requirements of the HRA integrity test, with the consideration of appropriate mitigation measures. The Stage 2 Appropriate Assessment concluded that on the basis of agreeing the appropriate monitoring and mitigation measures during the scheme operation with Natural England and the Environment Agency, no adverse effects on the River Lambourn SAC and the Kennet and Lambourn Floodplain SAC are anticipated. It should be noted that completion of the licence application is still required in order for the scheme to be implemented.

5.8 SUMMARY

In general, the demand side options were found to have beneficial impacts on SEA objectives for population and human health and material assets and resource use. Minor adverse impacts have been identified with respect to other users where restrictions of water use are involved and also for cultural heritage and emissions.

The assessment has found that supply side options would have adverse impacts associated which typically relate to additional energy requirements, emissions and materials used to maintain supply. The LON_0013, LON_0020 and KEN_0006 options have the greatest beneficial effects, as they have the potential to deliver large volumes of water during drought events. These options all provide major beneficial effects with respect to SEA objectives regarding protecting and enhancing health and well-being, enabling access to essential services, and improving resilience to the threats of climate change.

Impacts on SEA objectives for drought permit/order options were mainly associated with impacts on groundwater levels and the subsequent effects on surface waters and their ecology. Reductions in groundwater levels and surface water levels also have the potential for adverse impacts on archaeology and cultural heritage and on landscape and visual amenity. The assessment showed that for WRZs with a number of drought options to select from, a distinction can be made between options that would be considered more sustainable than the others within the same WRZ and this is used to inform the order in which they would be implemented.

6. CUMULATIVE ASSESSMENT

6.1 INTRODUCTION

The cumulative assessments presented in this section have been carried out in line with the methodology described in Section 4.

6.2 DEMAND SIDE OPTIONS

6.2.1 Cumulative effects of demand management options

During a drought, demand management options would be implemented sequentially as conditions worsen and the associated trigger levels are reached. Early-stage options focus on customer communications and promoting voluntary water-saving, followed by interventions to reduce leakage, and then more stringent restrictions on water use where necessary. This staged approach ensures that measures are proportionate to the severity of the drought, minimise unnecessary impacts on customers and the environment, and maximise overall water savings as conditions escalate.

Because these measures are layered over time, their environmental effects also accumulate gradually. When considered together, the demand management options included in the DP are expected to generate an overall beneficial cumulative effect on water resources, primarily through reduced abstraction and improved system resilience. These improvements deliver secondary positive effects on biodiversity and the water environment. Minor adverse cumulative effects may occur due to increased operational activities (e.g. vehicle movements associated with leakage control), but these are temporary, small-scale and outweighed by the wider environmental gains. No significant cumulative adverse effects are anticipated for other environmental receptors.

6.2.2 .Cumulative effects with supply side and drought permit/ order options

Demand management measures serve to reduce pressure on water resources and will have a positive influence on both supply side and drought permit/order options by reducing customer demand for water, and therefore reducing the abstraction at source.

6.3 CUMULATIVE EFFECTS BETWEEN SUPPLY SIDE AND DROUGHT PERMIT/ ORDER OPTIONS

This section considers the cumulative effects associated with implementation of all drought options across the Thames Water operational area. Cumulative effects of each supply side and drought permit/order drought option with each other supply side and drought permit/order drought option have been assessed and are summarised in the matrix presented in Error! Reference source not found..

The legend used is as follows:

Key

Mutually exclusive schemes, i.e. use the same site or the same resource

Potential adverse construction impacts if constructed simultaneously

Potential cumulative impacts in operation

No cumulative impacts

Error! Reference source not found. provides a framework as a basis for capturing cumulative effects that could arise from simultaneous deployment of two or more drought option groups.

The assessments have been informed by the EARs and mapping of locations of drought options, surface water and groundwater catchments.

Due to the uncertainty of the timing/implementation of the various supply side drought options, the cumulative impacts of drought options across multiple areas have not been assessed in detail. In practice, in the event of a drought and possible application of drought permits/orders, the findings of the environmental assessment reports (EARs) would be reviewed and a cumulative assessment made of the precise options proposed for implementation at that time.

There are five pairs of mutually exclusive schemes – schemes that use the same site or the same resource. The second schemes use the same resource, but an increased output compared with the first and therefore there is no potential for cumulative effects. These are:

- LON_0019 1 and LON_0019 2
- SWOX_0002 1 and SWOX_0002 2
- SWOX_0001 1 and SWOX_0001 2
- SWOX_0010 1 and SWOX_0010 2
- LON_0011 (200-100) and LON_0011 (200-0)

The potential cumulative impacts in the operation of options have been identified on Error! Reference source not found. and are discussed below. For the other options not discussed below, no cumulative impacts have been identified with other options.

6.3.1 SWOX_0009 with SWOX_0010 (1) and SWOX_0002 (1)

The SWOX_0009 abstraction lies in close proximity to the SWOX_0010 abstraction, both abstracting from the Great Oolite Aquifer. The SWOX_0002 abstraction, abstracting from the Inferior Oolite Aquifer is situated close by. The SWOX_0009 and SWOX_0010 (1) drought permit options individually affect the same five watercourses: Ampney Brook, Poulton Stream, Marston Meysey Brook, Blackford Barn Stream and a short reach of the River Thames (from the confluence with Ampney Brook until its confluence with the River Ray). The SWOX_0002 (1) drought permit option affects the River Churn. A separate cumulative assessment was undertaken for operation of all three drought permits simultaneously and is available in Appendix D of the respective EARs. Potential cumulative impacts are as follows:

- The potential for cumulative impact of the SWOX_0009, SWOX_0010 (1) and SWOX_0010 (1) reaches would extend beyond the individual drought permits, but not beyond that described for the SWOX_0002 (2) drought permit. The extended zone of influence for cumulative impact includes Cumulative Reach 9 - River Coln - Coln (from Coln Rogers) and Thames (Coln to Leach) (GB106039029992).
- The potential hydro-ecological impact of the SWOX_0009, SWOX_0010 (1) and SWOX_0010 (1) drought permits on Cumulative Reach 9 associates with reductions in streamflow compared to the baseline during summer periods of drought permit implementation. Post-drought permit the modelling indicates limited short-term and localised reductions in flow resulting from drought permit implementation during the early part of the recovery period (October to December). Cumulative Reach 9 is not anticipated to be impacted by operation of the SWOX_0009, SWOX_0010 (1) and SWOX_0002 (1) individually.
- The overall assessment for Cumulative Reach 9 concludes **moderate** risk to river habitats, **low** risk to water quality (associated with SRP) and **low** risk to water quality pressures (associated with discharge from STW_0003).
- Elsewhere, the magnitude of impacts would remain the same as for either SWOX_0010 (2) or SWOX_0002 (2). However, the duration of impacts is expected to increase for winter permits in some cumulative reaches; Ampney Brook (from source to the confluence with the River Thames), Poulton Stream (from source to the confluence with Ampney Brook), Marston Meysey Brook (from source to the confluence with the River Thames), taking six months to recover compared to four months for SWOX_0010 (2) alone.
- The cumulative impact of the SWOX_0009, SWOX_0010 and SWOX_0002 (1) reaches on river habitats, water quality, water quality pressures and flow pressures is not considered likely to increase from that assessed for the drought permits in isolation. Therefore, the impacts to the environmental receptors under this cumulative scenario is also expected to remain the same.

6.3.2 SWOX_0001 (1) with SWOX_0011

The SWOX_0001 abstraction lies in close proximity to the SWOX_0011 abstraction, both abstracting from the Wiltshire Chalk Aquifer. The SWOX_0001 (1) and SWOX_0011 drought permit options individually affect the River Kennet. The SWOX_0011 drought permit also affects the River Og, an ephemeral watercourse which is a tributary of the River Kennet. A separate detailed cumulative assessment was undertaken for these options,

which is available in Appendix D of the respective EARs. Cumulative Reaches 1 and 2 cover the same extent as Reach 1 and 2 for SWOX_0011 drought permit, meanwhile Cumulative Reach 3 covers the same extent as Reach 2 for SWOX_0001 (1). Potential cumulative impacts are as follows:

- The extent of Cumulative Reach 1 and Reach 3 are not considered likely to change, nor the hydrological impact to increase above that assessed for SWOX_0011 or SWOX_0001 (1) drought permit, respectively, if both drought permits are implemented at the same time.
- The extent of Cumulative Reach 2 is not considered likely to change compared to that assessed for SWOX_0011 drought permit Reach 2, however the hydro-ecological impact is expected to increase above that assessed for SWOX_0011 drought permit operating individually if both drought permits are implemented at the same time. The hydro-ecological impact in the reach is expected to be similar to that of SWOX_0001 (1) operating individually, however the extent is considered likely to change compared to that assessed for SWOX_0001 (1) drought permit Reach 1, starting further upstream, if both drought permits are implemented at the same time.
- Cumulative impacts on river habitats, water quality, water quality pressures and flow pressures are not considered likely to increase above those assessed for the drought permits individually.

6.3.3 SWOX_0001 (2) with SWOX_0011

The SWOX_0001 abstraction lies in close proximity to the SWOX_0011 abstraction, both abstracting from the Wiltshire Chalk Aquifer. The SWOX_0001 (2) and SWOX_0011 drought permit options individually affect the River Kennet. The SWOX_0011 drought permit also affects the River Og, an ephemeral watercourse which is a tributary of the River Kennet. A separate detailed cumulative assessment was undertaken for these options, which is available in Appendix D of the respective EARs. Cumulative reaches 1 and 2 cover the same extent as Reach 1 and 2 for SWOX_0011 drought permit, meanwhile Cumulative reaches 3 and 4 cover the same extent as Reach 2 and 3 for SWOX_0001 (2), respectively. Potential cumulative impacts are as follows:

- The extent of the zone of influence as a result of both drought permits operating is not anticipated to be significantly different cumulatively compared to the permits operating individually. Groundwater recovery within vicinity of SWOX_0001 abstraction is not anticipated to be extended compared to the permit operating individually, however associated groundwater recovery within the vicinity of the SWOX_0011 abstraction is extended compared to the permit operating individually. This is potentially a result of groundwater modelling assuming SWOX_0011 drought permit runs for a total of nine months in the cumulative scenario, rather than the six month period assessed for the individual permit (presented in Appendix A of the SWOX_0011 EAR).
- The extent of Cumulative impact on Reach 1 is not considered likely to change compared to that assessed for SWOX_0011 drought permit on Reach 1 if both drought permits are implemented at the same time. However the hydro-ecological impact is expected to increase above that assessed for SWOX_0011 drought permit operating individually if both drought permits are implemented at the same time. It should be noted that in addition to the cumulative abstraction resulting in greater impacts on river flow, hydro-ecological impact is likely increased compared to individual permit operation as a result of groundwater modelling assuming SWOX_0011 drought permit runs for a total of nine months in the cumulative scenario, rather than the six month period assessed for the individual permit (presented in Appendix A of the SWOX_0011 EAR).
- The extent of Cumulative impact on Reach 2 is not considered likely to change compared to that assessed for SWOX_0011 drought permit Reach 2, however flow reductions are predicted to persist for two months post-drought permits, extending the low-flow period by approximately one month compared to the SWOX_0001 (2) drought permit operating individually. The hydro-ecological impact in the reach is expected to be similar to that of SWOX_0001 (2) operating individually, however the extent is considered likely to change compared to that assessed for SWOX_0001 (2) drought permit Reach 1, starting further upstream, if both drought permits are implemented at the same time.
- The extent of Cumulative Reach 3 and 4 are not considered likely to change, nor the hydrological impact to increase above that assessed for SWOX_0001 (2) drought permit if both drought permits are implemented at the same time. As a result, the cumulative impact on river habitats, water quality and environmental pressures to flow and water quality are not likely to increase from that assessed for SWOX_0001 (2) in isolation.

6.3.4 SWOX_0011 and SWOX_0012

The SWOX_0012 abstraction lies approximately 1km away from the SWOX_0011 1 abstraction. Both drought permit options affect the same watercourses (the River Og and River Kennet), therefore individually and cumulatively have the same hydrological impacted reaches (i.e., Cumulative Reaches 1 and 2). Potential cumulative impacts are as follows:

- Groundwater modelling indicates that with the implementation of the both drought permits, the River Og will be dry for up to an additional 51 days. This corresponds to a **moderate** impact on Cumulative Reach 1.
- Flow reductions in the River Kennet equate to less than 10% of the total flow in the River Kennet which corresponds to a negligible hydrological impact. More significant flow reductions in the River Kennet would occur within the hydrological winter that follows the period of drought permit implementation, while groundwater recovery takes place. Nevertheless, the drought permit will result in lower flows during the early winter than would otherwise occur. Thus, it is concluded that the hydrological impact of the drought permit on this Cumulative Reach 2 is **minor**.
- However, hydrological impacts and associated impacts to the physical environment (i.e., water quality and geomorphology) are categorised as the same level of significance as described for SWOX_0012 drought permit Reaches 1 and 2. Therefore, cumulative impacts are similar to those identified for the SWOX_0011 1 and SWOX_0012 drought permits individually. Reach 1 (River Og) has a medium risk to water quality associated with SRP concentrations only, however, Reach 2 (River Kennet) has a low risk to water quality associated with total ammonia, dissolved oxygen and SRP.
- The cumulative impacts on the identified environmental features when operating the drought permits simultaneously are similar to the impacts identified for the SWOX_0012 drought permit when operated individually. This includes a moderate impact on the River Kennet SSSI due to a reduction in abundance or distribution of species supported by the designated site, from October to March only. Therefore, the range of precautionary monitoring and mitigation measures identified for receptors with a potential impact identified as being of moderate significance/risk (ecological features) or magnitude (other features) are also the same as those described in the SWOX_0012 EAR.

6.3.5 SWOX_0011 1, SWOX_0012, SWOX_0001 1 and SWOX_0001 2 with the KEN_0006

Before either of the two SWOX_0001 drought permits and two SWOX_0011 drought permits are implemented, the KEN_0006 will already be operating in the nearby Lambourn catchment. It is not anticipated that the implementation of any of these drought permits will have any cumulative impacts with the KEN_0006 due to the distance between the catchments and abstraction boreholes. Furthermore, the KEN_0006 is not considered to significantly impact upon flow in the River Kennet. A Restoring Sustainable Abstraction Investigation[23] used groundwater modelling to assess the impact of the SWOX_0011 (1) abstraction on flow in River Aldbourne. The model compared two scenarios when the abstraction at SWOX_0011 (1) was zero and another when abstraction was at 4.4Ml/d. The results suggested that drawdown in the Aldbourne catchment was very limited, between 0 and 30 cm which equated to a 0.1Ml/d reduction of flow in the River Aldbourne itself. It is noted that impacts of the abstraction at SWOX_0011 1 were modelled on the 1976 drought conditions, therefore does not include the full abstraction from KEN_0006. The SWOX_0001 abstractions and associated drawdown is not anticipated to impact on flow in the River Aldbourne given that the hydrogeological zone of impact extends for approximately 1.5km downstream of the start of Cumulative Reach 1 to Axford Farm and not as far as the Aldbourne. Thus, it is not considered that the KEN_0006, SWOX_0001 drought permits and SWOX_0011 drought permits will have any cumulative impacts on the River Kennet or River Aldbourne.

6.3.6 SWOX_0001 2 with SWOX_0011 1 and SWOX_0012

The SWOX_0001 2 abstraction lies in close proximity to the SWOX_0011 1 and SWOX_0012 abstractions. The SWOX_0001 2 and SWOX_0011 1 and SWOX_0012 drought permits individually affect the same watercourse, the River Kennet. Potential cumulative impacts are as follows:

- Simultaneous implementation of the SWOX_0001 2, SWOX_0011 1 and SWOX_0012 drought permits would cause **major** reductions in flow for Cumulative Reaches 1 and 2, **moderate** flow reductions in Cumulative Reach 3, and **negligible** hydrological impacts in Cumulative Reach 4.

However, recovery as a result of all three drought permits operating is not anticipated to be significantly different cumulatively.

- Cumulative geomorphology impacts are assessed as **moderate** in Cumulative Reaches 1 and 2, **minor** in Cumulative Reach 3 and **negligible** in Cumulative Reach 4.
- The risk of water quality deterioration linked to SRP is **medium** in Cumulative Reaches 1 to 3, and risks associated with deterioration in dissolved oxygen concentrations is **low** for these reaches. In addition, the risk of water quality deterioration linked to total ammonia is **low** in Cumulative Reach 1.
- There are no significant risks to river flows in the impacted reaches from other groundwater abstractions (other than from the Thames Water abstractions themselves) or surface water abstractions. The cumulative risk from flow pressures with the SWOX_0001 2, SWOX_0011 1 and SWOX_0012 drought permits in place is hence considered to be **low**.
- As the cumulative hydrological and physical environment impacts are categorised as the same level of significance as described for the SWOX_0001 (2) drought permit, the outcome of the environmental features assessments specified for the SWOX_0001 (2) drought permit is applied to the cumulative scenario.

6.3.7 SWOX_0009, SWOX_0010 (2) and SWOX_0002 (2)

The SWOX_0009 abstraction lies in close proximity to the SWOX_0010 abstraction, both abstracting from the Great Oolite Aquifer. The SWOX_0002 abstraction, abstracting from the Inferior Oolite Aquifer is situated close by. The SWOX_0009 and SWOX_0010 (2) drought permit options individually affect the same five watercourses: Ampney Brook, Poulton Stream, Marston Meysey Brook, Blackford Barn Stream and a short reach of the River Thames (from the confluence with Ampney Brook until its confluence with the River Ray). The SWOX_0002 (2) drought permit option affects the following watercourses: River Churn, Cirencester Watercourses, River Frome, Ampney Brook and the River Coln. A separate cumulative assessment was undertaken for operation of all three drought permits simultaneously, and is available in Appendix D of the respective EARs.

Overall, the cumulative impact of the SWOX_0009, SWOX_0010 (2) and SWOX_0002 (2) reaches on river habitats, water quality, water quality pressures and flow pressures is not considered likely to increase from that assessed for the drought permits in isolation.

6.3.8 KEN_0002 with KEN_0003

The KEN_0002 abstraction lies in close proximity to the KEN_0003 abstraction. The KEN_0002 and KEN_0003 drought permit options individually affect the same watercourses namely the River Kennet and Holy Brook. An additional reach will be impacted from the confluence of the Holy Brook and the River Kennet when compared to the hydrological impact associated with the KEN_0002 drought permit individually. This reach was however, included in the EAR for the KEN_0003 drought permit. Potential cumulative impacts are as follows:

- Operation of both drought permits will result in a 57% reduction in flow in Cumulative Reach 1, corresponding to a **major** impact. Impacts in Cumulative Reach 2 are **beneficial** due to an increase in flow in this reach. A **minor** hydrological impact is concluded for Cumulative Reach 3.
- The Chalk aquifer the KEN_0003 drought permit abstracts from has a short recovery period and tests have found that groundwater levels recover within 10 days at the end of pumping. It is therefore considered that the cumulative impacts of both drought permits will not extend beyond the 6 months of implementation.
- Cumulatively, operation of the KEN_0002 and KEN_0003 drought permits could exert a **high** risk to water quality in Cumulative Reach 1 as a result of flow reductions. **Medium** risks to water quality without the drought permit being implemented already exist in this reach (Holy Brook) due to occasional spikes in SRP concentrations. For Cumulative Reach 2 the risk of water quality deterioration with both drought permits operating is assessed as **medium** risk. The risk to Cumulative Reach 3 is assessed as being **medium**. No water quality risks associated with decreases in dissolved oxygen saturations or increases in total ammonia concentrations are expected to arise during the joint operation of both permits.

- The cumulative impacts on the identified environmental features when operating KEN_0002 and KEN_0003 drought permits simultaneously are similar to the impacts identified for Reach 1 of the KEN_0002 drought permit when operated individually. This includes a range of moderate to minor impacts to the environmental features in Cumulative Reach 1. Elsewhere, there are negligible impacts.

6.3.9 SWOX_0006 and SWOX_0007

The SWOX_0006 drought permit, independently of the SWOX_0007 drought permit, would result in river flow effects only at river flows less than 136.38Ml/d in the River Thames in the vicinity of the SWOX_0007 abstraction. The impacted reach extends from Sandford Lock (around 30km upstream of the SWOX_0007 abstraction) until Caversham Lock (around 30km downstream of the SWOX_0007 abstraction). The SWOX_0006 drought permit is associated with a minor risk to river habitats in this reach. The SWOX_0007 drought permit is associated with negligible risk to river habitats. As a result, the cumulative impact as a result of both the SWOX_0007 and SWOX_0006 drought permits corresponds to a minor risk to river habitats which is the same magnitude as for the SWOX_0006 drought permit when considered on its own. Hence the cumulative impacts, for both schemes, would be the same as those considered for the SWOX_0006 drought permit on its own.

6.3.10 LON_0019 1 with LON_0019 2

When implementing the LON_0019 (2) drought permit the LON_0019 (1) drought permit will already be operating. Under the normal operating licence at LON_0019, recent actual rates suggest that approximately 4Ml/d is abstracted between April to September. The LON_0019 (1) drought permit would increase this abstraction to 8Ml/d and the LON_0019 (2) drought permit would increase this to 12Ml/d.

6.3.11 LON_0003 with LON_0022

Downstream of the River Shuttle confluence to Vitbe Sluice, groundwater levels would already be below the stream bed, cumulative effects of abstracting an additional 2.8Ml/d from LON_0003 borehole, in addition to the 6.0Ml/d already considered from LON_0022 Borehole would constitute a negligible impact on flows in the River Cray during the duration of the drought permits. Groundwater recovery is typically rapid and differences in stream flows with the drought permit in place compared to without would be minimal.

An AMP6 investigation[24] into the impact of the LON_0001 abstraction on the Lower Cray concluded that there is evidence that the LON_0001 abstraction currently impacts on groundwater levels in the Cray catchment and stream flows in the River Cray. Additional data is now available to use within the assessment for these reaches, however, the hydrological assessments have not been updated within the respective EARs for this iteration of the Drought Plan. Therefore, the cumulative assessment between the LON_0003 and LON_0022 drought permits remains **uncertain** and a more detailed assessment will be undertaken at the time of drought permit application.

6.4 HABITATS REGULATIONS ASSESSMENT SCREENING REPORT OF DROUGHT PLAN SUMMARY OF CUMULATIVE ASSESSMENT

Thames Water has undertaken the first stage in the HRA process, Screening, on its DP options list, and a further Stage 2 Appropriate Assessment on one of its drought options, as summarised in Section 5.6. It has been carried out in parallel with the SEA and is reported separately in the HRA Screening Report. The screening stage establishes whether any schemes have the potential for a Likely Significant Effect (LSE) on the integrity of a European designated site. No in-combination effects of Thames Water's DP 2027 with its WRMP24, the Environment Agency's DPs, the Thames and Severn River Basin Management Plan 2022, other water company WRMPs and DPs, and other major infrastructure projects have been identified, and no LSE are anticipated.

[24] Thames Water (2018) AMP6 Low Flows Investigations: Lower Cray. Integrated Impact Assessment. Prepared by SNC Lavalin and Atkins on behalf of Thames Water. 25 October 2018.

6.5 CUMULATIVE EFFECTS WITH EXISTING RELEVANT PROGRAMMES, PLANS, POLICIES AND PROJECTS

6.5.1 Other Water Company Drought Plans

Assessment of the potential for cumulative impacts of supply side and drought permit/order options listed in neighbouring water companies' drought plans has been undertaken.

It should be noted that DPs for other companies/organisations are subject to review from the Environment Agency and Defra on the same timescales as Thames Water's DP revision. Thames Water has previously held discussions with neighbouring water companies in order to identify any drought options which may have the potential to cause in-combination effects, where necessary further discussions and, if necessary, more assessment work will be used to further improve understanding of potential in-combination effects. 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 drought option implementation to ensure that no changes to the neighbouring water company drought options has been made in the intervening period, and that the assessment, therefore remains valid.

The assessments have been informed by the most recent information available on the neighbouring water company DPs. Where possible, the SEAs and the details presented in the drought option details tables often presented in the appendices of the respective water company DP have been taken into consideration, together with information gathered through Thames Water's ongoing consultation with other neighbouring water companies.

The following neighbouring watering company DPs were considered:

- Anglian Water (2022)
- Severn Trent (2022)
- Southern Water (2022)
- Wessex Water (2021)
- Bristol Water (2022)
- Essex and Suffolk Water (2022)
- South East Water (mid Kent) (2022)
- SES (2022)
- Affinity Water (2022)

6.5.1.1 Anglian Water

No cumulative impacts between drought options in Thames Water's DP 2027 with Anglian Water's Drought Plan (2022) have been identified.

6.5.1.2 Severn Trent

No cumulative effects between drought management measures in the Thames Water's DP 2027 and Severn Trent Water DP (2022) have been identified. The cross-border supplies between Severn Trent Water and Thames Water are minor in terms of drought planning.

6.5.1.3 Southern Water

No cumulative impacts between drought options in Thames Water's DP 2027 with Southern Water's Drought Plan (2022) have been identified.

6.5.1.4 Wessex Water

No cumulative impacts between drought options in Thames Water's DP 2027 with Wessex Water's Drought Plan (2022) have been identified.

6.5.1.5 Bristol Water

No cumulative impacts between drought options in Thames Water's DP 2027 with Bristol Water's Drought Plan (2022) have been identified.

6.5.1.6 Essex and Suffolk Water

Essex and Suffolk Water (ESW) obtain 16% of water supplied in their Essex water resource zone from Thames Water via a raw water bulk transfer from the Lee Valley reservoirs. This would be reduced in drought conditions depending on the respective demand management measures implemented by each company. ESW's Draft DP (2022) includes an option that would increase the Chigwell bulk transfers from Thames Water by agreement. The ESW Drought Plan assumes that Thames Water's own resource situation would be robust and that the spatial distribution of drought impact would not cover Thames Water's supply area although this would not be the case in all drought situations. The agreement states that during an "unusual drought" Thames Water shall supply to ESW such quantities as shall represent "fair apportionment" of the water available and will therefore be dependent on Thames Water's own resource situation, the nature and spatial distribution of the drought, and demand in the Chigwell area. Therefore, the drought action would only be realistic in the event that a drought affecting ESW does not materially affect Thames Water, therefore, no cumulative impacts between drought options in Thames Water's DP 2027 with Essex and Suffolk Water Drought Plan (2022) have been identified.

6.5.1.7 South East Water (Mid Kent)

No cumulative impacts between drought options in Thames Water's DP 2027 with South East Drought Plan (2022) have been identified. At the time of writing South East Water had no drought options confirmed.

6.5.1.8 SES Water

SES have not included any temporary bulk transfers from other water companies, or third parties, in their Drought Plan 2022 and no permanent bulk transfers will be in operation for the lifetime of this iteration of the Drought Plan.

Cumulative impacts have been identified between the LON_0021 DP option and drought options in the SES Water Drought Plan. The SES Water Drought Plan (2022) includes a potential drought permit/order option which involves an increase in abstraction from three groups of groundwater abstraction sites (Hackbridge/Goatbridge group, Woodmansterne group and Kenley group). Given the proximity of these boreholes to the LON_0021 boreholes, there is the potential for cumulative effects, such as exacerbating the reduction in groundwater levels and associated effects, if the SES Water drought permits were to be implemented at the same time as the LON_0021 drought permit. In 2017, Thames Water conducted a study together with SES Water[25] to understand the impact their individual groundwater abstractions were having on the Wandle Catchment. Borehole monitoring was carried out to assess how the different groundwater abstractions impact on levels in the Chalk aquifer when they are at their fully licensed rates. Results of the monitoring suggested that when operating the LON_0021 abstraction at its peak fully licensed abstraction of 15.5Ml/d (equivalent to the drought permit) groundwater drawdown of a depth of 0.1m would be experienced in the immediate vicinity of the abstraction. North of the abstraction, drawdown response varied with some boreholes not responding to the increased abstraction and others drawn down by 0.03-0.1m. There was no response to the increased abstraction south of LON_0021 in any of the boreholes. An assessment[26] of the cumulative impacts of operating these two drought permits simultaneously has identified that together, the drought permits will exert a moderate impact on the River Wandle from Waddon Ponds to STW_0001 effluent ditch. The impact of the drought permits will be mitigated by the 90Ml/d discharge coming from the STW_0001, therefore, the impacted reach ends here. The hands-off- flow associated with the Hackbridge and Carshalton Arm augmentation scheme will also ensure that the River Wandle has enough flow in that section of the river to ensure that effluent discharge continues to flow downstream and does not back up the River Wandle. In an evolving drought situation, further discussions with SES Water will be required in order to understand the likelihood of the drought permits being operated at the same time. Alternative drought options may need to be reviewed in order to determine the appropriate approach according to the prevailing drought conditions.

The potential for cumulative impacts with other water company drought plans must be reviewed at the time of any potential future LON_0021 drought permit application, as they may have been revised in the interim.

6.5.1.9 Affinity Water

Affinity Water Drought Plan (2022) notes that there are currently four bulk import connections with Thames Water in their central region. Potential cumulative effects have been identified for the River Lea. Thames Water abstract surface water from the river Lee at New Gauge (between Hertford and Ware). The abstraction rate from this source at the time of the implementation of the Affinity Water drought permits (if required) is therefore critical and there is potential for cumulative effects. However, the Affinity Water drought permits are

lower in volumetric terms and result in indirect impacts as they are from groundwater. The HRA identified the following supply side options in Thames Water's DP 2027 overlap with the Lee Valley SPA and Ramsar site: LON_0013 (1km), LON_0015 (4.1km), LON_0017 (4.4km), LON_0002 (8.4km) and LON_0005 (9.6km). As these options relate to groundwater abstractions, there is potential for in combination effects with Affinity Water's THUN drought permit. However, Thames Water's schemes abstract from a confined chalk aquifer approximately 30 – 60m below surface level and are overlayed with London Clay, whereas Affinity Water's THUN drought permit would abstract from chalk closer to surface level (3 – 7.4m below surface level). In addition, Thames Water options use existing licenses (they are not drought permits) and have been included in the baseline for the regional modelling conducted by Affinity Water for use in their EAR updates, where no in-combination effects were identified. Therefore, no cumulative impacts between drought options in Thames Water's DP 2027 with Affinity Water's Drought Plan (2022) have been identified at this stage.

6.5.2 Water Resource Management Plans

Assessment of the potential for cumulative effects with Thames Water's WRMP and neighbouring water companies' WRMPs has been undertaken.

It should be noted that all WRMPs are subject to review every five years. The information used to carry out this assessment is considered to be the most up to date information publicly available at time of writing (Periodic Review 2024 (PR24) WRMPs). Where possible, this is also informed through on-going discussions that Thames Water are holding with neighbouring water companies in order to identify any water resource options which may have the potential to cause cumulative impacts with their drought options. The assessments should be reviewed at the time of drought option implementation to ensure that no changes to the WRMPs have been made in the intervening period, and that the assessment, therefore remains valid. For example, the PR29 WRMPs will be developed and issued during the period of Thames Water's DP.

The assessments have been informed by each Water Companies' WRMP and where possible SEAs.

The following WRMPs were considered:

- Thames Water (2024)
- Anglian Water (2024)
- Severn Trent (2024)
- Southern Water (2024)
- Wessex Water (2024)
- Bristol Water (2024)
- Essex and Suffolk Water (2024)
- South East Water (mid Kent) (2024)
- SES Water (2024)
- Affinity Water (2024)

All of Thames Water's neighbouring companies WRMPs include significant demand management components which will complement the Demand Side measures of Thames Water's DP. Improved water efficiency and leakage reduction across the country will give beneficial cumulative impacts in terms of lower energy use and carbon emissions from reduced pumping and treatment. These measures will also reduce the need to abstract new water resources, thereby ensuring ecological water requirements are maintained.

6.5.2.1 Thames Water WRMP24

A number of the DP demand side measures are fundamentally linked to the demand management schemes in the WRMP24, with the measures contained in each plan acting in-combination to provide a resilient water supply to customers in the Thames Water region and safeguard the provision of essential water supplies in drought conditions. Although some demand side measures may exacerbate certain adverse effects, such as additional vehicle movements, their implementation alongside the wider demand-management actions in the WRMP is expected to result in an overall beneficial cumulative impact on water resources. This improvement in water efficiency and reduced leakage is also likely to deliver indirect beneficial effects on environmental receptors, including biodiversity.

In terms of geographic location, possible interactions with options included in Thames Water's Final WRMP24 as either operational or under construction in the timeframe of Thames Water's DP (to 2032) were identified as:

- The WRMP24 includes four drought permit options; GUI_0006, HEN_0002/HEN_0001, KEN_0005 and SWOX_0007. These options are mutually exclusive with the DP therefore no cumulative effects are assessed.
- Cumulative effects may occur in catchments where the drought management plans are put in place in similar geographic locations to the WRMP measures. WRMPs are required to be updated every five years by water companies. The cumulative effects assessments will be updated over time to reflect any changes to the WRMP.

6.5.2.2 Anglian Water (2024)

With particular focus on the Ruthamford South, South Essex and Central Essex WRZs which border Thames Water's region, there are no likely potential cumulative effects with Anglian Water's WRMP.

6.5.2.3 Severn Trent (2024)

There are no Thames Water DP options in close enough proximity to Severn Trent Waters region to result in any construction related cumulative effects. There is no hydrological link between the options in Thames Waters DP and Severn Trent's WRMP24. No cumulative effects are, therefore, likely to occur with Thames Water's DP.

6.5.2.4 Southern Water (2024)

Focussing on areas which boarder the Thames Water region it has been identified that there are no Thames Water DP options in close enough proximity to result in any cumulative effects.

6.5.2.5 Wessex Water (2024)

Wessex Water does not project a deficit until 2079 and as such the WRMP24 proposes no supply options that overlap with the DP. No cumulative effects are therefore likely to occur with Thames Water's DP.

6.5.2.6 Bristol Water (2024)

There are no Thames Water DP options in close enough proximity to the Bristol Water region to result in any construction related cumulative effects and there is no part of the Thames region in hydrological connectivity with the Bristol Water region. No cumulative effects are therefore likely to occur with Thames Water's DP.

6.5.2.7 Essex and Suffolk Water (2024)

The Essex and Suffolk Water WRMP includes no supply options, as all of the WRZs are projected to be in surplus over the plan period. No cumulative effects are, therefore, likely to occur with Thames Water's DP.

6.5.2.8 South East Water (mid Kent) (2024)

There are no Thames Water DP options in close enough proximity to the South East Water's WRMP24 options. No cumulative effects are considered likely to occur with Thames Water's DP.

6.5.2.9 SES Water (2024)

No options in the SES Water WRMP24 will become utilised during the DP operational period, as a result, no cumulative impacts were identified between the SES Water WRMP24 and the Thames Water DP.

6.5.2.10 Affinity Water (2024)

No cumulative impacts were identified between the Affinity Water WRMP24 and the Thames Water DP.

6.5.3 Environment Agency Thames area Drought Plan

The potential for cumulative effects of Thames Water's DP 2027 with the Environment Agency's Thames area Drought Plan[25] has been assessed.

Part of the Environment Agency's role is to reduce the impact of drought on the natural environment . The Environment Agency can apply for environmental drought orders if the environment is suffering serious

[25] Environment Agency (2025) Thames are drought plan, 20 March 2025. Version 2025.1.0

damage because of abstraction during a drought. The plan says that the Environment Agency would work with stakeholders including water companies to identify where and when it would be necessary and its potential effects on any essential public supplies or infrastructure.

Environment Agency environmental drought order actions have the potential to have in-combination impacts with Thames Water's DP 2027. The Environment Agency can apply to the Secretary of State for environmental drought orders if the environment is suffering serious damage as the result of abstraction during a drought. Nevertheless, liaison is required with the Environment Agency to permit the operation of the DP schemes, and the Environment Agency also monitor the actions taken to ensure these are in accordance with any drought permits/orders.

Given that the Environment Agency drought actions will have a positive effect on river flows and lake levels and, therefore, the natural environment and ecology, there will be **no cumulative impacts** between it and the Thames Water drought plan options. However, due to the uncertainties of potential locations, this should be considered further at the time of any potential application for drought permits/orders by Thames Water or the Environment Agency.

6.5.4 Thames River Basin Management Plan

Assessment of the potential for cumulative impacts of supply side and drought permit/order options with drought options listed in the River Basin Management Plans has been undertaken.

The updated Thames RBMP[26], published in October 2022, describes the planned steps to implement the measures required to achieve the environmental objectives of the Water Framework Directive (WFD). It provides the framework for protecting and enhancing the water environment.

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

The RBMP and DP contain similar objectives around the protection, sustainable management and use of the water environment in terms of quality and quantity. As a result, interaction between both plans is considered likely, particular on the water environment and water dependant habitats. SEA was undertaken on the second cycle of RBMPs and not updated during the third RBMP cycle. The SEA of the Thames RBMP determined that the plan was likely to have significant positive effects on the environment, particularly in respect of biodiversity, water, population and human health and that any local negative effects would expect to be mitigated during implementation. Therefore, there will be **no cumulative impacts** between the Thames RBMP and the Thames Water drought plan options. The Environment Agency is carrying out SEA for the fourth cycle as there is potential for more significant changes to the measures. This will be reviewed during future drought plan cycles for potential cumulative effects. The HRA[27] of the Thames RBMP concluded that the risk of significant in-combination effects on Habitats sites with other plans is considered to be low.

6.5.5 Cumulative effects with any identified relevant projects

There are a number of infrastructure priorities identified in regional and local planning documents in addition to national programmes. These include the improvement of existing infrastructure by extension, redevelopment or increasing existing capacity. With regard to other projects that may result in a cumulative effect with the Thames Water DP 2027, those considered to be **relevant at the strategic level** comprise large scale high profile infrastructure schemes and particularly those that may affect water flows or groundwater levels, these projects comprise:

- River Thames Scheme (reducing flood risk from Datchet to Teddington)
- LON_0027 Direct River Abstraction (TDRA)

[26] Environment Agency (2022) Thames river basin district river basin management plan: updated 2022. Available at: https://www.gov.uk/guidance/thames-river-basin-district-river-basin-management-plan-updated-2022 [Accessed February 2026]

[27] Environment Agency (2022) River basin management plan for the Thames River Basin District: Habitats Regulations Assessment, September 2022. Available at https://assets.publishing.service.gov.uk/media/635248048fa8f554cca7b226/Thames_river_basin_management_plan_2022_HRA.pdf [Accessed February 2026]

- Oxford Flood Alleviation Scheme
- High Speed Two Rail Network (HS2)

6.5.5.1 The LON_0027 Direct River Abstraction (TDRA) project

The TDRA Strategic Resource Option (SRO) is a key component of Thames Water's long-term strategy to secure London's water supply. It was selected as a part of the SRO London Effluent Reuse by the Regulators' Alliance for Progressing Infrastructure Development (RAPID). It is designed to enhance drought resilience, ensuring reliable service for customers and supporting the millions of people who live, work, and visit the city. The scheme is intended to meet the forecast demand of 13 million people across the Thames Water region by 2050, including 10 million in London[28].

Construction is scheduled to begin in 2029, with full operation expected by 2033. During operation, water will be abstracted from the River Thames upstream of LON_0027 and transferred via a new connecting pipeline into an existing underground tunnel, delivering supplies to Thames Water's reservoirs for treatment into drinking water. To maintain river levels and protect the environment, the abstracted water will be replaced with highly treated recycled water from STW_0004 in Isleworth. This recycled water will be conveyed through a new underground pipeline to an outfall structure upstream of LON_0027, ensuring both additional supply resilience and the safeguarding of river ecology.

Only construction-phase activities are relevant to the cumulative effects assessment, as the operation of the scheme will not coincide with the DP. All construction works associated with both the scheme and the drought options are expected to follow established best practice, and therefore no significant cumulative effects are anticipated.

6.5.5.2 White Horse Reservoir SRO (previously known as South East Strategic Reservoir Option – SESRO)

This SRO involves the construction and operation of a new reservoir near Abingdon in Oxfordshire, designed to help secure water supplies for around 15 million people across the South East. The reservoir would play a critical role in addressing anticipated water shortages. It would be filled with water from the River Thames during the winter months, when flows are higher and resources more plentiful. When river levels fall or demand increases, water would be released from the reservoir back into the Thames for re-abstraction downstream.

The proposed reservoir would provide direct supply to local customers, as well as homes and businesses across London and the wider South East. It would also support customers served by Affinity Water and Southern Water, strengthening resilience across the region[29].

Construction of the reservoir is not anticipated to start until 2032 and will not overlap with the DP, therefore no cumulative effects are anticipated.

6.5.5.3 The River Thames Scheme (reducing flood risk from Datchet to Teddington)

The River Thames Scheme (RTS) is a significant green and blue infrastructure development that will comprise a range of new features, including a new flood channel to reduce flood risk whilst providing habitat for wildlife and new recreational opportunities. Construction of the scheme is anticipated to take place between winter 2026 to 2032, with the flood channel being operational from 2030, meaning both periods overlap with the DP. There is potential for cumulative effects with the RTS and LON_0011 drought permit option. The RTS PEIR identified potential significant negative effects during construction on the River Thames – Cookham to Egham water body and during construction and operation in the River Thames – Egham to Teddington water body. The LON_0011 drought permit requires construction to enable back pumping at several weirs which may coincide with the construction of the RTS. As a result, there is potential for cumulative effects as a result of exacerbated contamination risk to the water bodies, however, it is assumed good industry practice will be applied during construction, therefore significant cumulative effects are not anticipated. During operation, the introduction of augmented from the RTS has the potential for reduced flow and creation of a depleted reach with may result in impacts to river habitats and aquatic receptors. No secondary mitigation has been proposed by the RTS at this stage and further modelling is being undertaken to develop these. Operation of the LON_0011 drought permit assumes management actions to maintain levels will be carried out by the

[28] Thames Water (2025) Teddington Direct River Abstraction (TDRA) Available at https://thames-sro.co.uk/projects/tdra/ [Accessed December 2025]

[29] Thames Water (2025) South East Strategic Reservoir Option (SESRO) Available at https://thames-sro.co.uk/projects/sesro/ [Accessed December 2025]

Environment Agency, however, a precautionary approach has been applied and significant cumulative effects on the water environment between the RTS and the LON_0011 drought permit cannot be ruled out at this stage. This will be reviewed during any future drought permit applications.

6.5.5.4 Oxford Flood Alleviation Scheme

The Environment Agency is working in partnership on a major new scheme to reduce flood risk in Oxford. The Oxford Flood Alleviation Scheme will create a new stream with a wetland wildlife corridor to reduce flood risk in the city and surrounding areas. The scheme will be approximately 5km long and is designed to reduce flood risk around the River Thames through diverting flood water across the undeveloped flood plain away from properties. The same amount of water that enters the scheme will return to the River Thames at Kennington.

Construction is expected to begin in late 2026 and continue for up to five years, overlapping with the duration of the DP. The scheme's study area also coincides with the impacted reaches of the SWOX_0006 drought permit option. Modelling undertaken to support the planning application for the flood alleviation scheme identified negligible changes in groundwater levels and no significant alterations to surface water levels in the Seacourt Stream or in adjacent streams and ditches.

The SWOX_0006 EAR identified moderate and uncertain risks to river habitats across the affected reaches. The drought permit option would also include over-pumping from the River Thames into selected distributaries to maintain minimum flows, with implementation requiring only minor construction works such as temporary electric and submersible pumps.

Construction of the flood alleviation scheme carries the potential for accidental pollution of local watercourses, including the Seacourt, Bulstake and Hinksey Streams. However, the application of best practice pollution prevention and construction management measures throughout all works would minimise such risks. As a result, significant cumulative effects are not anticipated. Likewise, no Likely Significant Effects (LSEs) on the Oxford Meadows SAC are expected, either alone or in-combination, for the scheme or the drought permit option.

6.5.5.5 High Speed Two Rail Network (HS2)

HS2 (High Speed Two) is a major UK rail infrastructure project designed to create a new high-speed railway linking London with Birmingham, with original plans to extend further north to Manchester and Leeds now cancelled. Originally set to complete in 2033, the project programme is currently being reset with no new completion date formally agreed. Construction activities are anticipated to continue throughout this period and will overlap with the DP.

The construction of HS2 has the potential to contribute to cumulative impacts when considered alongside drought options in the DP, particularly where activities overlap spatially or temporally within shared catchments or water bodies. These risks include changes to water quality, increased sedimentation, disturbance to hydrological regimes, and potential effects on dependent habitats and species. However, any construction associated with the drought options is anticipated to be minor and both HS2 and the drought options will ensure robust coordination, follow best practice and adhere to regulatory requirements, therefore significant cumulative effects are unlikely.

7. MITIGATION AND MONITORING

7.1 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 1.7**, **Table 1.4**). The Sections 7.2 and 7.3 below describe how these tasks have been addressed and how Thames 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.

To put this into context, a summary of Drought Plan monitoring and mitigation guidance provided by the Environment Agency is provided below.

7.1.1 Environmental Monitoring and Mitigation Guidance

Guidance on environmental monitoring, the objectives and content of the Environmental Monitoring Plan (EMP) and mitigation, is given in Sections 4 and 5 of the Environment Agency's "Environmental assessment for water company drought planning supplementary guidance"[13].

The guidance states that an EMP should include details of the monitoring required and states this should include:

Baseline monitoring – collection and maintenance of baseline monitoring datasets help to understand the nature of the environment under 'normal' circumstances, along with establishing the sensitivity of the environment to changes in flow and any especially sensitive features of interest. Baseline monitoring is also essential in enabling understanding of the actual environment impact of supply side drought management actions. It allows comparison between the environment under 'normal' conditions against observed environmental datasets during and after a drought.

Onset and In-drought monitoring - to help assess the immediate environmental impacts of drought action during a drought along with informing choices and implementation of mitigation measures. This can be split between pre-permit application (**Onset**) and post-permit implementation (**In-drought**) stages.

Post-drought (recovery) monitoring - to help assess any longer term environmental impacts of, or recovery from, the implementation of drought actions.

It may be possible to **mitigate** or reduce adverse effects on the environment. The guidance states a drought plan should, therefore, identify:

- pre-drought mitigation actions: actions you will implement before or whilst the drought is developing to reduce the likely environmental impact of your proposed actions
- in-drought mitigation actions: actions you will implement during a drought to minimise the environmental impact of your proposed actions
- post drought mitigation actions: actions you will implement following a drought to reduce any environmental impacts that may occur as a result of the actions you implement

The DPG also indicates that a drought plan should provide evidence that the mitigation measures that are proposed will be effective for the features that could be at risk from a drought option. The EMP should show how this will be monitored. The drought plan should also include details of any additional permits or approvals needed to carry out the mitigation measures.

In some cases, mitigation actions may be necessary to prevent derogation of other abstractions (for example, by providing alternative supplies).

7.2 MITIGATION

Consideration of mitigation measures has been an integral part of the SEA process. The methodology for the assessment of the drought options is provided in **Section 4**. 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 EARs, where available, or Thames Water's drought management action forms in the Drought Plan (see Appendix M, 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[4] the SEA appraisals have assumed the implementation of reasonable mitigation, such as the use of good construction practice. This is particularly applicable to unused supply-side options which do not operate as 'business as usual' and would require recommissioning in the event of use as a drought option.
- No mitigation is proposed for abstraction licences which are issued by the Environment Agency. Where appropriate these licences already contain flow constraints at low flows or conditions associated with an operating agreement. This is applicable to all supply-side options which are actions within existing abstraction licence limits which have been subject to the Environment Agency's Review of Consents process.

As part of the environmental assessment of each drought option, for those receptors with a potential moderate or major impact from implementation of the associated drought permit, site specific monitoring has been recommended, together with triggers to inform practical implementation of mitigation measures. These are described in Thames Water's drought permit / order EARs and EMPs. The range of mitigation measures that are possible for the features identified fall into three general activities:

1. Measures to reduce impacts at source, by reducing the hydrological or water quality impact.
2. Measures to modify environmental conditions in the river, by conducting actions within the watercourse to reduce the pressure at sensitive locations; and
3. Management of sensitive ecological species and communities, through direct action to mitigate impact by movement or management of the receptor/feature itself.

Mitigation measures identified in the EARs are feature, location, species and community specific. They will be informed by walkover surveys of all significantly impacted reaches before and during the implementation of the drought measure. This will enable a targeted approach to mitigation based on monitoring. If post-drought measure monitoring identifies impacts associated with implementing the permit, consideration will be given to compensatory measures, such as restocking of fish.

Examples of monitoring and mitigation that would be conducted during implementation of drought measures and following the drought period are presented in **Table 7.1**. **Note that these are examples only and have been provided to indicate the type of mitigation considered when assessing residual impacts during the SEA process. Actual EMPs would be site and event-specific, and finalised at the time of implementation**.

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Table 7.1 Example monitoring and mitigation measures included in site-specific EARs and EMPs

Potential impact	Baseline conditions	On-set of environmental drought	During Drought Permit implementation		Post Drought Permit
	Key locations	**Monitoring and trigger setting**	**Trigger and monitoring to inform mitigation action**	**Mitigation actions**	**Monitoring and post-drought mitigation (where applicable)**
Habitat degradation as a result of decreased river velocity. This impact would manifest as elevated SRP which can alter the macrophyte community composition.	The macrophyte community is well understood as a result of: • LEAFPACS2[30] macrophyte surveys. • Local knowledge of the site provided by Natural England. • Walkover surveys to further assess the level of connectivity	Surveillance walkover survey, including site photographs. LEAFPACS2 Macrophyte survey at established sites. Macrophyte surveys can be carried out during June-September. If drought occurs outside this period, only surveillance walkover surveys can be undertaken	Surveillance walkover including site photographs. LEAFPACS2 Macrophyte survey at established sites. Macrophyte surveys can be carried out during June-September. If drought occurs outside this period, only surveillance walkover surveys can be undertaken	If existing macrophyte community has significantly deteriorated, consider reseeding/ replanting where possible to promote recovery. Replanting of macrophyte community composition to be informed by pre-drought community and on return to baseline SRP (Soluble Reactive Phosphorus) concentrations	Surveillance walkover survey, including site photographs. LEAFPACS2 macrophyte surveys at established sites for two years following drought permit implementation. Macrophyte surveys can be carried out during June-September. If monitoring is required outside this period, only surveillance walkover surveys can be undertaken
Habitat degradation as a result of decreased river velocity, or level and velocity due to lower flows in the distributaries	To establish a baseline, monitoring should incorporate: • Walkover to further assess the level of connectivity between the mesotrophic pools in area of influence.	Surveillance walkover of mestotrophic standing waters and investigate if connectivity with source is lost during environmental drought. Carry out appropriate monitoring (Boat/Wader) of mesotrophic standing water habitat using Common Standards Methodology criteria for assessing habitat condition.	Surveillance walkover of mestotrophic standing waters and investigate if connectivity with source is lost during drought permit implementation, if not already lost during environmental drought. Carry out appropriate monitoring (Boat/Wader) of mesotrophic habitat using Common Standards	Specific mitigation for the mesotrophic standing water habitats in area of influence is not considered feasible.	In year following drought permit implementation, carry out appropriate monitoring (Boat/Wader) of mesotrophic habitat using Common Standards Methodology criteria for assessing habitat condition.

[30] The Lake and Ecological Assessment Framework for Phytoplankton and Associated Classification System (version 2). It is a UK regulatory tool used under the Water Framework Directive to assess lake ecological status based on phytoplankton data, producing standardised ecological quality classifications.

Potential impact	Baseline conditions	On-set of environmental drought	During Drought Permit implementation		Post Drought Permit
	Key locations	Monitoring and trigger setting	Trigger and monitoring to inform mitigation action	Mitigation actions	Monitoring and post-drought mitigation (where applicable)
			Methodology criteria for assessing habitat condition.		
Reduction in macroinvertebrate habitat quality or species diversity as a result of sedimentation Reduction in extent and quality of in-stream and marginal habitats in some distributaries Reduction in abundance or distribution as a result of reduced water quality.	Location of suitable habitat and their susceptibility to drying up is known as a result of: • RHS+[31] walkover survey Species presence is known as a result of: • Data from routine EA monitoring sites for invertebrates. • The Environmental Report	Walkover of key sections known to be susceptible to lower flows. Assessment of sediment cover. Measure dissolved oxygen, conductivity and temperature in the field using calibrated handheld equipment. No in stream monitoring is advised during environmental drought to prevent further harm to the invertebrate community through kick/ sweep sampling.	Continue walkovers, and measure dissolved oxygen, conductivity and temperature in the field using calibrated handheld equipment. Further assessment of sediment cover. No in stream monitoring is advised during drought permit implementation to prevent further harm to the invertebrate community through kick/ sweep sampling.	Mitigating the impact of the drought permit on macroinvertebrate species through direct intervention is not feasible. In extreme circumstances habitat improvements post drought can aid in natural recolonization of macroinvertebrates.	In year following drought targeted sweep sampling of silty habitat and submerged macrophytes in established monitoring sites to ascertain population quality post drought. Laboratory sorted to identify presence macroinvertebrates. Measure dissolved oxygen, conductivity and temperature in the field using calibrated handheld equipment. Post drought assessment of the in stream sediment cover.
Reduction in extent or quality of important habitats for fish community, including potential	Spawning habitats are understood as a result of: • RHS+ walkover survey	Walkover of key locations recording the number of redds potentially affected if survey is undertaken at right time of year.	Additional walkovers if situation is expected to deteriorate in stream sections known to contain spawning habitats.	Considering eggs require high quality flowing water for development, these cannot be removed and expected to survive.	Post-drought and year 3 fish population surveys at Environment Agency monitoring sites (corresponding with a

[31] An enhanced version of the UK River Habitat Survey (RHS) that integrates additional physical habitat metrics and pressures. It provides a more comprehensive assessment of river morphology and condition for monitoring, classification, and management purposes.

Potential impact	Baseline conditions	On-set of environmental drought	During Drought Permit implementation		Post Drought Permit
	Key locations	Monitoring and trigger setting	Trigger and monitoring to inform mitigation action	Mitigation actions	Monitoring and post-drought mitigation (where applicable)
exposure of marginal and bed substrates (spawning, nursery and cover habitats) in distributaries that are not level controlled	• Environment Agency Rare and Protected Species database • Data from EA fish monitoring sites • Local knowledge from Environment Agency fisheries and ecology teams Liaise with local Environment Agency fisheries and ecology teams to determine key spawning habitat locations.	Record extent of exposed marginal spawning and bed substrates. Photographs should be taken during each walkover As an alternative use historic redd count data to provide an approximation. Appropriate trigger values would be set for level and flow for spawning habitats based on local circumstances, timing, seasonality and expert opinion.		The focus would therefore be on protecting the adult population (see actions below).	control and impact site/s) to determine any changes in population dynamics both temporally and spatially, including fish ageing (scale) analysis. Undertake River Habitat Surveys (RHS) to focussed on locations of bank poaching, surface water outfall input and also downstream of weirs where flows are likely to be particularly low in order to provide a suitable comparison to make a conclusion on deterioration or otherwise within the impacted reaches.
Fragmentation of fish community habitats and increased significance of obstacles	Fish populations are well understood as a result of: • RHS+ walkover survey • Environment Agency Rare and Protected Species database • Data from EA fish monitoring sites • Local knowledge from Environment Agency fisheries and ecology teams	Walkover of key sections known to be susceptible to lower flows. Known areas of dry habitats are typically avoided during the walkover, but recorded where observed to confirm and/or confirm existing knowledge	Additional walkovers, if situation is expected to deteriorate in stream sections known to contain high fish densities.	Migration is inhibited by the increased significance of obstacles. Mitigating this impact can incorporate physically moving migrating fish upstream or downstream of barriers depending on species and natural migration behaviour. This should not be considered if movement increases the risk of fish mortality.	In the year following a drought undertake a post-drought fish survey to substantiate the level of impact.

Potential impact	Baseline conditions	On-set of environmental drought	During Drought Permit implementation		Post Drought Permit
	Key locations	Monitoring and trigger setting	Trigger and monitoring to inform mitigation action	Mitigation actions	Monitoring and post-drought mitigation (where applicable)
Increased mortality (density dependent) within the fish community as a result of increased predation and competition	Fish populations are well understood as a result of: • RHS+ walkover survey • Environment Agency Rare and Protected Species database • Data from EA fish monitoring sites • Local knowledge from Environment Agency fisheries and ecology teams	Approximation of the number of each fish species (e.g. 10s, 100s) in each ponded reach, where safe and practical to do so. Measure dissolved oxygen, conductivity and temperature in the field using calibrated handheld equipment. Appropriate trigger values would be set for level and flow based on local circumstances, timing, seasonality and expert opinion.	Additional walkovers, if situation is expected to deteriorate in stream sections known to contain high fish densities.	Deployment of aeration equipment in key reaches that have standing or slow flowing water with low oxygen levels. Consider provision of bird scarers to deter piscivorous birds at significant locations. Bird scarers would only be used where it is possible for birds to safely move to alternative habitats. Operation of key flow control structures to maintain water levels in key reaches. In extreme cases, consider capture/rescue surveys for fish at significant locations. It is noted these will need sufficiently sized aerated holding tanks as it is unlikely that they can be moved to elsewhere in the catchment.	In the year following a drought undertake a post-drought fish surveys at EA monitoring sites to substantiate the level of impact.
Impacts on fish community growth and/or alteration to feeding and migration	Fish populations are well understood as a result of: • RHS+ walkover survey • Environment Agency Rare and Protected Species database • Data from EA fish monitoring sites	The hydrological impact could also adversely affect the growth and development of rheophilic species, with feeding regimes and movement patterns associated with species development potentially altered as a result of the	Monitoring this potential impact should involve post drought monitoring of the fish population to ascertain the relative health of year classes which are influenced by this impact. As such no monitoring is advised during drought as	Mitigating the impact of changes to feeding regimes and movement patterns is not feasible during drought permit implementation.	Post-drought and year 3 fish population surveys at Environment Agency monitoring sites (corresponding with a control and impact site/s) to determine any changes in population dynamics both temporally and spatially,

Potential impact	Baseline conditions	On-set of environmental drought	During Drought Permit implementation		Post Drought Permit
	Key locations	Monitoring and trigger setting	Trigger and monitoring to inform mitigation action	Mitigation actions	Monitoring and post-drought mitigation (where applicable)
	(including analysis of growth rates for each species using fish scales) • Local knowledge from Environment Agency fisheries and ecology teams	reduction in flows and water levels. Monitoring this potential impact should involve post drought monitoring of the fish population to ascertain the relative health of year classes which are influenced by this impact. As such no monitoring is advised during drought	this may cause further stress.		including fish ageing (scale) analysis. Mitigating this pressure should concentrate on post drought monitoring to determine overall health of fish population and inform measures to facilitate the recovery of the fish population post drought permit implementation.
Reduction in abundance and distribution of flow fish sensitive species.	Brown trout and bullhead populations are well understood as a result of: • RHS+ walkover survey • Environment Agency Rare and Protected Species database • Data from EA fish monitoring sites • Local knowledge from Environment Agency fisheries and ecology teams	Surveillance walkover of key sections with fish populations which are known to be susceptible to hydrological impacts (as informed by RHS+ surveys and local knowledge from EA).	Surveillance walkover of key sections with fish populations which are known to be susceptible to hydrological impacts (as informed by RHS+ surveys and local knowledge from EA).	In extreme cases, following consultation with the Environment Agency restocking of flow sensitive fish species can be considered if recovery needs to be facilitated	Surveillance walkover of key sections with fish populations which are known to be susceptible to hydrological impacts (as informed by RHS+ surveys and local knowledge from EA) in the year following the drought. Post drought, electric fishing surveys should also be carried out at established fish monitoring sites which have known populations of sensitive species. This will assist with determining whether these have successfully migrated back to previously impacted reaches from non-impacted tributaries.

Potential impact	Baseline conditions	On-set of environmental drought	During Drought Permit implementation		Post Drought Permit
	Key locations	Monitoring and trigger setting	Trigger and monitoring to inform mitigation action	Mitigation actions	Monitoring and post-drought mitigation (where applicable)
					More than one survey may be required
Entrainment of fish individuals during back-pumping operation.	This impact will be isolated to locations where back pumping is in operation.	As back pumping will only be in operation during drought permit implementation, monitoring during environmental drought is not required.	On initiation of back pumping operation, periodic monitoring of the pumps should be carried out to ensure fish screens and deterrents are successful in preventing fish entrainment. Frequency of monitoring should be determined locally depending on duration of the back pumps are in operation.	The pumps would be appropriately screened to protect against fish entrainment using “fish friendly" pumps if available or, standard pumps supplemented with an appropriate screen and fish deterrent devices compliant with the Environment Agency Best Practice Guide.	Monitoring for this impact is not required post-operation.
Reduction in abundance or distribution of fish species as a result of reduced water quality.	Water quality is well understood as a result of water quality monitoring undertaken by the EA. In addition, key water quality locations (e.g. near STW outfalls) have been identified. Fish populations are well understood as a result of: • Data from EA fish monitoring sites • Local knowledge from Environment Agency fisheries and ecology teams	Surveillance walkover of key sections with known water quality pressures and sections known to be susceptible to lower flows. Measure dissolved oxygen, conductivity and temperature in the field using calibrated handheld equipment. Appropriate trigger values would be set for key water quality determinants (e.g. dissolved oxygen), level and flow based on local circumstances, timing, seasonality and expert opinion.	Surveillance walkover of key sections with known water quality pressures and sections known to be susceptible to lower flows. Measure dissolved oxygen, conductivity and temperature in the field using calibrated handheld equipment. Deployment of automated water quality equipment that continuously monitors for dissolved oxygen.	Deployment of aeration equipment in key reaches that have standing or slow flowing water with low oxygen levels. Where point sources (STW) can affect water quality, consider improving treatment efficiency and/or dosing with hydrogen peroxide in line with Environment Agency Guidance to (further) reduce biochemical oxygen demand.	Post-drought and year 3 fish population surveys if needed at Environment Agency monitoring sites (corresponding with a control and impact site/s) to determine any changes in population dynamics both temporally and spatially, including fish ageing (scale) analysis. Walkover of key spawning locations recording the number of redds potentially affected, undertaken during the winter spawning period. Record extent of exposed marginal habitats, spawning

Potential impact	Baseline conditions	On-set of environmental drought	During Drought Permit implementation		Post Drought Permit
	Key locations	Monitoring and trigger setting	Trigger and monitoring to inform mitigation action	Mitigation actions	Monitoring and post-drought mitigation (where applicable)
	Undertake River Habitat Surveys (RHS) focussed on locations of bank poaching, surface water outfall input and also downstream of weirs where flows are likely to be particularly low in order to provide a suitable comparison to make a conclusion on deterioration or otherwise within the impacted reaches.	Known areas of dry habitats are typically avoided during the walkover, but recorded where observed to confirm and/or confirm existing knowledge.			habitats, composition of the bed substrate and estimates of overlaying silt cover. Undertake River Habitat Surveys (RHS) to focussed on locations of bank poaching, surface water outfall input and also downstream of weirs where flows are likely to be particularly low in order to provide a suitable comparison to make a conclusion on deterioration or otherwise within the impacted reaches.
Increased proliferation of blue green algal blooms.	Key locations of blue green algal bloom can be established upon liaising with EA.	Monthly walkover of key locations previously established. Visual assessment of algal blooms. Samples to be collected from algal blooms which are suspected to contain blue green algae. Samples to be analysed following EA guidance on assessing blue green algae blooms. On confirmation of a blue green algae bloom EA are to be notified.	Monthly walkover of key locations previously established for visual assessment of algal blooms. Samples to be collected from algal blooms which are suspected to contain blue green algae. Samples to be analysed following EA guidance on assessing blue green algae blooms. On confirmation of a blue green algae bloom EA are to be notified.	Mitigation of blue-green algal blooms should centre around reporting all blooms to the EA to ensure that appropriate action can be taken to inform the public. If major risk identified, consider treatment of algal bloom.	Upon cessation of the drought permit, baseline conditions will return in the River Thames. As such no further monitoring will be required post-drought.

Potential impact	Baseline conditions	On-set of environmental drought	During Drought Permit implementation		Post Drought Permit
	Key locations	**Monitoring and trigger setting**	**Trigger and monitoring to inform mitigation action**	**Mitigation actions**	**Monitoring and post-drought mitigation (where applicable)**
Increased distribution of invasive non-native species (INNS)	Locations of INNS species to be ascertained upon liaising with local EA biodiversity and ecology teams. To establish a baseline, investigatory surveys and methods are to be informed by EA knowledge around key locations (including back pumping operations and known any known obstacles to INNS spread)	Further monitoring of INNS using previously detailed survey techniques, at locations established during investigatory surveys. This includes the mapping of localities where INNS were observed and photographs	Further monitoring of INNS using previously detailed survey techniques, at locations established during investigatory surveys	All INNS surveys should be carried out in compliance with biosecurity guidance	Further monitoring of INNS using previously detailed survey techniques, at locations established during investigatory surveys. All INNS records to be provided to the EA Monitoring should commence in the year following the drought and should continue for at least two years

7.3 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 measures.

DPs encompass a basket of measures that will only be implemented if and when required because of the unpredictable occurrence of a drought event, and thus the actual impact of the plan over its life is subject to very significant uncertainties.

Thames Water's DP includes a range of possible measures to allow Thames Water to respond drought events in the most appropriate way. It is impossible to predict in advance which and how many of the measures will be required, and in which order of priority, to respond to each particular drought event. Correspondingly, it is therefore difficult to prescribe monitoring for the effects of the DP as a whole, and more appropriate to consider monitoring for drought options with significant environmental effects should these options be implemented during an actual drought.

As described in Section 1.5, EARs have been prepared. The EARs include detailed Environmental Monitoring Plans (EMPs) in support of the DP and in compliance with the requirements of Section 6 (Environmental Assessment, Monitoring and Mitigation) of the DPG. The DPG requires the environmental assessment and EMPs to be updated regularly. The monitoring requirements will be assessed in more detail through this process. As described in the DP 2022, in the event of a drought requiring the implementation of drought option(s), Thames Water will review the requirement for environmental monitoring in consultation with the Environment Agency and Natural England.

As part of the environmental assessment of each drought option, for those receptors with a potential **moderate** or **major** impact from implementation of the associated drought permit, site specific monitoring has been recommended, together with triggers to inform practical implementation of mitigation measures. These are described in the EARs and EMPs. Monitoring would occur at the following three stages:

1. At the on-set of environmental drought.
2. During implementation of the drought permit/order.
3. After the drought.

Control sites are important for a consistent approach to monitoring. Control sites would be identified during implementation of the permit on systems experiencing environmental drought. Possible options could include reaches upstream of those impacted, or other watercourses within Thames Water's drought permit/order options where the watercourses are comparable and not subject to a drought permit application.

APPENDICES

APPENDIX A: REVIEW OF POLICY, PLANS AND PROGRAMMES

The findings of the review of policy, plans and programmes are set out in **Table A-1**. The purpose of the review and the key findings are set out in **Section 2.2** of this Environmental Report. This table sets out the purpose and objectives of the policy, plans and programmes, their potential relationship with Thames Water's Drought Plan and the potential implications of the plan objectives for the objectives of the SEA.

Table A-1: Summary of the Policy, Plans and Programmes reviewed and their link to the Strategic Environmental Assessment

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
International	
Convention on Biological Diversity (2022) *Kunming-Montreal Global Biodiversity Framework (GBF)*	
The Kunming-Montreal Global Biodiversity Framework (GBF) is an outcome of the 2022 United Nations Biodiversity Conference and was adopted during COP15. The GGF contains four global goals and 23 targets, categorised into three areas; reducing threats to biodiversity, meeting peoples needs through sustainable use and benefit-sharing and tools and solution or implementation and mainstreaming. Although not a legally binding treaty, the GBF is expected to have a major impacts in countries as they endeavour to meet their targets, through development of new plans and regulations. For example, protected areas will be expanded and subsidies for ecologically destructive activities such as fishing will have to be redirected.	The SEA should seek to promote the protection and enhancement of biodiversity.
Council of Europe (1979) *The Convention on the Conservation of European Wildlife and Natural Habitats (The Bern Convention)*	
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 SEA should seek to promote the protection and enhancement of biodiversity.
Council of Europe (1983) *The Convention on the Conservation of Migratory Species of Wild Animals (The Bonn Convention)*	
Aims to conserve terrestrial, marine and avian migratory species by protecting endangered, conserving or restoring the places where they live, mitigating obstacles to migration and controlling other factors that might endanger such species. Enforced in European legislation through the Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC).	The implementation of the DP may influence biodiversity in the region and as such the SEA should seek to maintain or enhance the quality of habitats and biodiversity.
Council of Europe (1985) *Convention for the Protection of the Architectural Heritage of Europe* Granada Convention	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
To reinforce and promote policies for the conservation and enhancement of Europe's heritage.	The SEA should take into account the need to conserve heritage.
Council of Europe (1992) *Valletta Convention on Protection of Archaeology*	
The Valletta Convention is one of a series of Conventions for the protection of the cultural heritage produced by the Council of Europe over the last fifty years.	The SEA should take into account the need to conserve heritage.
Council of Europe (2000) *European Landscape Convention (Florence Convention)*	
The European Landscape Convention is an international convention focusing specifically on landscape. The UK Government signed the European Landscape Convention in 2006 and it became binding from March 2007.	The SEA should take landscape quality into account and include water quality in the assessment framework.
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 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 in the Thames Water SEA study area and as such the SEA should consider the need to maintain or enhance the quality of the regions landscapes and the potential enjoyment of these landscapes.
EC 2001/42/EC on the Assessment of the Effects of Certain Plans and Programmes on the Environment (SEA Directive)	
The SEA Directive provides the following requirements for consultation: • Authorities which, because of their environmental responsibilities, are likely to be concerned by the effects of implementing the plan or programme, must be consulted on the scope and level of detail of the information to be included in the Environmental Report. These authorities are designated in the SEA Regulations as the Consultation Bodies.	The Directive sets the basis for SEA as a whole and therefore indirectly covers all objectives. The SEA Directive has been transposed into UK Law through the SEA Regulations.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
• The public and the Consultation Bodies must be consulted on the draft plan or programme and the Environmental Report, and must be given an early and effective opportunity within appropriate time frames to express their opinions. • EU Member States must be consulted if the plan or programme is likely to have significant effects on the environment in their territories. • The Consultation Bodies must also be consulted on screening determinations on whether SEA is needed for plans or programmes under Article 3(5), i.e. those which may be excluded if they are not likely to have significant environmental effects.	
European Parliament and Council of the European Union (2024) Directive (EU) 2024/2881 of the European Parliament and of the Council on Ambient Air Quality and Cleaner Air for Europe (Recast)	
The recast directive updates and strengthens EU air quality legislation, reflecting advances in science, health evidence, and climate policy. It introduces stricter limit and target values for key pollutants, aligns EU standards more closely with World Health Organization guidelines, and enhances monitoring, enforcement, and public access to information. The directive requires Member States to adopt air quality roadmaps, improve cross-border cooperation, and ensure that measures deliver cleaner air for citizens and ecosystems.	The **DP** should consider the requirements of the recast directive, ensuring that drought measures do not exacerbate air quality issues (e.g., through increased emissions from emergency water transfers or energy use). The **SEA** should note the impact of the DP on air quality and public health, recognising the importance of integrating drought actions with pollution reduction, climate resilience, and compliance with EU air quality standards.
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 SEA should seek to protect and conserve important bird habitats.
European Commission (1999) *Landfill of Waste Directive (99/31/EC)*	
The Directive aims at reducing the amount of waste landfilled; promoting recycling and recovery; establishing high standards of landfill practice across the EU, and preventing the shipping of waste from one Country to another. The objective of the Directive is to prevent or reduce as far as possible negative effects on the environment (in particular on surface water, groundwater, soil, air and human health) from the landfilling of waste, by introducing stringent technical requirements for waste and landfills.	The DP should take the effects on waste to landfill into account. The SEA assessment should consider the effects on water, soil, air, human health and waste.
UNESCO, ICOMOS, ICCROM, and IUCN (2022) Guidance and Toolkit for Impact Assessments in a World Heritage Context	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
This document provides comprehensive guidance and practical tools for conducting impact assessments in a World Heritage context, with a focus on safeguarding the Outstanding Universal Value (OUV) of cultural, natural, and mixed properties. Developed jointly by UNESCO, ICOMOS, ICCROM, and IUCN, it replaces earlier advisory notes and offers a unified framework for integrating heritage, environmental, and strategic assessments. The guidance is intended for States Parties, site managers, developers, consultants, and decision-makers, and supports the World Heritage Committee in evaluating potential impacts on inscribed properties and their settings.	The SEA Framework should include an objective on the conservation and enhancement of heritage.
UNESCO, ICOMOS, ICCROM, and IUCN (2022) Guidance and Toolkit for Impact Assessments in a World Heritage Context – see above for detail on the successor policy	
This Advice Note provides States Parties and other stakeholders with guidance on how to identify, evaluate, avoid and mitigate potential impacts of development proposals on World Heritage values, before decisions are taken. It provides guidance on integrating natural World Heritage Sites within Environmental Assessments. It includes a set of World Heritage Impact Assessment Principles that can be applied to all types of environmental Assessments, a list of key questions to ask concerning World Heritage during the assessment as well as step-by-step guidance.	The DP should seek to contribute towards the protection of World Heritage Sites. The SEA assessment framework should include objectives and guide questions relating to the conservation of World Heritage Sites. The SEA assessment should also reflect/incorporate the principles of the guidance, where relevant.
Ramsar Convention (1971) *The Convention on Wetlands of International Importance*	
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.
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.
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*	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
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 SEA should seek to provide easily understood information to the public on the environmental implications of the DP and its constituent options.
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 • Need for integrated water management plans • 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 (2015) *The 2030 Agenda for Sustainable Development*	
This Agenda is a plan of action for people, planet and prosperity. It also seeks to strengthen universal peace in larger freedom. The Agenda remains the world's roadmap for ending poverty, protecting the planet and tackling inequalities. The 17 Sustainable Development Goals (SDGs), the cornerstone of the Agenda, offer the most practical and effective pathway to tackle the causes of violent conflict, human rights abuses, climate change and environmental degradation and aim to ensure that no one will be left behind. The SDGs reflect an understanding that sustainable development everywhere must integrate economic growth, social well-being and environmental protection.	The DP should be influenced strongly by all of these themes and should seek to take the SDGs into account. The SEA should seek to promote the achievement of the sustainable development goals outlined in this plan.
United Nations (2016) The Paris Agreement (2016), Cancun Agreement (2011) and Kyoto Agreement (1997)	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
The agreement represents key steps forward in capturing plans to reduce greenhouse gas emissions and to help developing nations protect themselves from climate impacts and build their own sustainable futures. It includes a shared vision to keep global temperature rise to below two degrees Celsius.	The SEA should consider the need for water companies to seek to promote a reduction in greenhouse gas emissions in carrying out its service activities.
World Commission on Environment and Development (1987) Our Common Future (The Brundtland Report)	
The Brundtland Report is concerned with the world's economy and its environment. The objective is to provide an expanding and sustainable economy while protecting a sustainable environment. The Report was a call by the United Nations: to propose long-term environmental strategies for achieving sustainable development by the year 2000 and beyond; to strengthen co-operation among developing countries and between countries at different stages of economic and social development to achieve common and mutually supportive objectives which take account of the interrelationships between people, resources, environment and development; to consider ways and means by which the international community can deal more effectively with environment concerns; and to help define shared perceptions of long-term environmental issues and the appropriate efforts needed to deal successfully with the problems of protecting and enhancing the environment, a long term agenda for action during the coming decades, and aspirational goals for the world community.	The SEA and DP should seek to contribute to sustainable development.
The World Heritage Convention (UNESCO) 1972 – a global instrument for the protection of cultural and natural heritage.	
A global instrument for the protection of cultural and natural heritage. Signatories commit themselves to refraining from 'any deliberate measures which might damage, directly or indirectly, the cultural and natural heritage' of their World Heritage Sites.	The DP and SEA should take account of the need to protect scheduled monuments and archaeological areas.
National	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
Ancient Monuments and Archaeological Areas Act 1979	
This act addresses the protection of scheduled monuments including the control of works affecting scheduled monuments. It also addresses archaeological areas.	The DP and SEA should take account of the need to protect scheduled monuments and archaeological areas.
Canal and River Trust (2015) Water Resources Strategy 2015 – 2020	
The Strategy sets out the Canal and River Trust's overarching vision for the period 2015 – 2020 for how it intends to manage water resources across the inland waterway network that it manages. The strategy is focused on delivering long-term security of water supply for the Canal and River Trust to achieve its vision of living waterways that transform places and enrich lives.	The DP should take into consideration the potential impact on the supply of water to the inland waterway network within the Thames Water operational area. The SEA should consider the effects of the DP on the long-term supply of water to the canal network.
Canal and River Trust (2015) Water Resources Strategy 2015 – 2020	
The Strategy sets out the Canal and River Trust's overarching vision for the period 2015 – 2020 for how it intends to manage water resources across the inland waterway network that it manages. The strategy is focused on delivering long-term security of water supply for the Canal and River Trust to achieve its vision of living waterways that transform places and enrich lives.	The DP should take into consideration the potential impact on the supply of water to the inland waterway network within the Thames Water operational area. The SEA should consider the effects of the DP on the long-term supply of water to the canal network.
The Climate Change Act 2008	
This act sets carbon targets for 2050. Under The Climate Change Act 2008 (2050 Amendment) Order 2019 the UK is required to reduce all greenhouse gas emissions to net zero by 2050.	This target needs to be taken into account by the SEA.
Cefas, Natural Resources Wales (NRW), Environment Agency (2024) Assessment of Salmon Stocks and Fisheries in England and Wales 2023.	
The updated assessment offers a comprehensive analysis of salmon stocks and fisheries, reflecting more recent data on population trends, exploitation, and environmental change. It considers the impacts of climate variability, water quality, and barriers to migration, and evaluates progress against conservation objectives. The report sets out evidence-based recommendations for management, including stricter exploitation controls, improved habitat restoration, and enhanced monitoring to ensure the resilience of salmon populations in the face of ongoing pressures.	The DP should consider the findings of the salmon stock assessments, ensuring that drought measures safeguard river flows, water quality, and migratory pathways critical to salmon survival.
DCMS (2013) Scheduled Monuments & Nationally Important but Non-Scheduled Monuments	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
This policy statement sets out Government policy on the identification, protection, conservation and investigation of nationally important ancient monuments, under the provisions of the Ancient Monuments and Archaeological Areas Act 1979. It includes principles relating to the selection of scheduled monuments and the determination of applications for scheduled monument consent.	The DP should seek to avoid adverse impacts on scheduled and un scheduled monuments. The SEA assessment framework should include specific objectives relating to cultural heritage.
DCMS (2016) The Culture White Paper	
This white paper sets out how the government will support the cultural sectors over the coming years and how culture will play an active role in building a fairer and more prosperous nation. It includes four key themes: everyone should enjoy the opportunities culture offers, no matter where they start in life; the riches of our culture should benefit communities across the country; and the power of culture can increase our international standing. The white paper includes objectives relating to the development of the historic environment sector, and the protection of world heritage.	The DP should seek to protect cultural heritage assets. The SEA assessment framework should include an objective relating to cultural heritage.
Department for Energy Security and Net Zero (DESNZ) (2023) National Policy Statements for energy infrastructure	
Energy National Policy Statements provide planning guidance for developers of nationally significant energy infrastructure projects. The energy National Policy Statements cover: • the overarching needs case for different types of energy infrastructure • natural gas electricity generation • renewable electricity generation • gas and oil infrastructure • electricity networks • nuclear power generation The guidance makes it easier for decision makers, applicants and the wider public to understand: • government policy on the need for nationally significant infrastructure projects (NSIPs) • how applications for energy infrastructure will be assessed	The DP must take account of the contents of the energy NPS. The impacts of the DP options on energy generation and NSIPs must be considered as part of the SEA.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
• the way in which impacts and mitigations will be judged	
DESNZ and BEIS (2020) Energy white paper: Powering our net zero future	
The white paper outlines a series of policies and commitments made by the government as part of the transition to net zero carbon emissions. The strategies are threefold: • Prioritisation of renewable sources energy generation and invest in low-carbon technologies • Supporting a green recovery from COVID-19 through investment in green industries. • Creating a fair deal for consumers through facilitating competition, enhanced regulation and strategies to improve the energy performance of homes.	The implementation of the DP may have an influence upon Thames 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.
DESNZ and BEIS (2021) Heat and buildings strategy	
This strategy sets out how the UK will decarbonise our homes, and our commercial, industrial and public sector buildings, as part of setting a path to net zero by 2050. The heat and buildings strategy sets out the government's plan to significantly cut carbon emissions from the UK's 30 million homes and workplaces in a simple, low-cost and green way whilst ensuring this remains affordable and fair for households across the country. Like the transition to electric vehicles, this will be a gradual transition which will start by incentivizing consumers and driving down costs. There are about 30 million buildings in the UK. Heating these buildings contributes to almost a quarter of all UK emissions. Addressing the carbon emissions produced in heating and powering our homes, workplaces and public buildings can not only save money on energy bills and improve lives, but can support up to 240,000 skilled green jobs by 2035, boosting the economic recovery, levelling up across the country and ensuring we build back better.	The DP should consider the impact of water supply and usage on carbon emissions from buildings. The SEA should include objectives and guide questions relating to energy use and carbon emissions.
Department for Energy and Climate Change (2021) Net Zero Strategy: Build Back Greener	
The Net Zero Strategy sets out policies and proposals for keeping the UK on track for carbon budgets, the Nationally Determined Contribution (NDC), and sets out our vision for a decarbonised economy in 2050. The Strategy sets out a delivery pathway showing indicative emissions reductions across sectors to meet targets up to the sixth carbon budget (2033-2037).	The DP should consider if it can support the delivery of the aims of the strategy. The SEA should include objectives and guide questions relating to energy use and carbon emissions.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
Defra (2025) The Government's Approach to Rural Proofing	
The updated framework establishes the current approach to rural proofing, requiring government departments and public bodies to consider rural impacts in policy development and delivery. It sets out principles for ensuring fairness, accessibility, and resilience in rural communities, embedding rural considerations into national strategies. The framework emphasises evidence-based decision-making, cross-government accountability, and stronger integration of rural priorities into climate adaptation, infrastructure, and economic growth policies.	The DP should consider the requirements of the rural proofing framework, ensuring that drought measures do not disadvantage rural communities and instead support resilience, accessibility, and sustainability. The SEA should note the impact of the DP on rural economies, services, and environments, recognising the importance of integrating drought actions with rural development, biodiversity protection, and climate adaptation.
Environment Agency and Defra (2020) National Flood and Coastal Erosion Risk Management Strategy for England	
The National Flood and Coastal Erosion Risk Management Strategy (FCERM Strategy) for England is the government's long-term plan for managing flood and coastal erosion risk across the country. It sets out how England will prepare for, reduce, and adapt to flooding and coastal change, especially as risks increase due to climate change.	The SEA should seek to ensure that flood risk in the region is not adversely affected by the implementation of the DP.
Environment Agency (2024) Shoreline Management Plan Guidance	
The updated guidance establishes the current approach to SMP preparation and review, reflecting advances in climate science, coastal modelling, and policy priorities. It sets out principles for adaptive management, embedding climate resilience, biodiversity protection, and sustainable development into coastal planning. The guidance ensures that SMPs are aligned with national flood and coastal erosion risk management strategies, and that they provide clear, consistent policies for managing risks while supporting communities, infrastructure, and the natural environment.	The SEA should take into account the effects of the DP on areas with a SMP.
Defra (2023) The Air Quality Strategy for England: Framework for Local Authority Delivery	
The framework establishes the current approach for managing air quality in England, focusing on the role of local authorities in delivering improvements. It sets out statutory responsibilities, guidance, and tools for councils to assess, plan, and act on air quality issues, with an emphasis on tackling nitrogen dioxide and particulate matter. The framework aligns with national and international commitments, embedding public health protection, climate resilience, and community engagement into local delivery.	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.
Defra (2007), Conserving Biodiversity in a Changing Climate: Guidance on Building Capacity to Adapt	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and 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 SEA must consider the impacts on biodiversity whilst also taking into account the potential for future climate change.
Environment Agency (2025) National Framework for Water Resources 2025: Water for Growth, Nature and a Resilient Future	
The Framework sets out how England will secure long-term, sustainable water supplies while protecting the environment and enabling economic growth under increasing pressure from climate change and population growth	The SEA should seek to ensure that the themes included in the framework 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 (2011) England Biodiversity Strategy – Climate Change Adaptation Principles: Conserving Biodiversity in a Changing Climate	
The updated strategy provided a more detailed framework for conserving biodiversity under climate change, building on the earlier principles. It emphasised the need for adaptive management, landscape-scale conservation, and integration of biodiversity into wider policies such as agriculture, forestry, and water management. The strategy highlighted practical measures to enhance resilience, including habitat restoration, connectivity, and reducing non-climate pressures, ensuring that biodiversity conservation supported both ecological integrity and human wellbeing in a changing climate.	The SEA must consider the impacts on biodiversity whilst also taking into account the potential for future climate change.
Defra (2009) Safeguarding our soils – A Strategy for England	
The 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.	The SEA should seek to ensure that the quality of the regions soils and their management is protected or enhanced.
Defra (2009) The Groundwater (England and Wales) Regulations 2009	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
The Groundwater Regulations are designed to implement a daughter directive to the European Water Framework Directive and prevent or limit the inputs of polluting substances into groundwater.	The SEA should include an objective relating to the effects of options on groundwater quality.
Defra (2023) The Air Quality Strategy for England: Framework for Local Authority Delivery	
The Air Quality Strategy for England: Framework for Local Authority Delivery aims to improve air quality and protect public health and the environment by empowering local authorities to take a leading role in managing and reducing pollution. It sets out a framework for achieving national air quality targets, particularly for PM2.5, by promoting proactive and preventative action, strengthening local monitoring and accountability, and ensuring effective use of local powers. The strategy prioritises reducing emissions from key sources such as transport, domestic burning and industry, while integrating air quality considerations into planning and wider policy decisions. It also seeks to build local authority capability, encourage collaboration, and increase public awareness to support long-term behavioural change and sustained improvements in air quality.	The DP should seek to ensure that air quality, climate change and human health are not adversely affected by the options/measures set out in the plan. The SEA should include guide questions relating to the effects of options on human health and the environment.
Defra (2010 c.29) Flood and Water Management Act 2010	
The Act provides the current legislative framework for managing flood and coastal erosion risk in England and Wales. It strengthened the role of local authorities as lead flood risk managers, clarified responsibilities across agencies, and introduced powers to manage surface water flooding more effectively. The Act also addressed wider water management issues, including reservoir safety and sustainable drainage systems, embedding resilience and sustainability into statutory duties. It established a more integrated, long-term approach to managing flood risk in the context of climate change and development pressures.	The **DP** should consider the requirements of the Flood and Water Management Act, ensuring that drought measures complement statutory flood risk management responsibilities and do not undermine resilience planning. The **SEA** should note the impact of the DP on land, water, and communities, recognising the importance of integrating drought actions with climate adaptation, sustainable drainage, and long-term flood risk management.
Defra (2025) Environmental Improvement Plan 2025	
The Environmental Improvement Plan 2025 (EIP 2025) sets out the UK Government's cross-government strategy to restore and enhance the natural environment in England, with the overarching aim of delivering measurable improvements to nature, environmental quality and resilience. It establishes a framework of ten long-term goals focused on restoring biodiversity, improving air and water quality, reducing pollution (including chemicals and waste), supporting a circular economy, and strengthening resilience to climate change and environmental hazards. The plan also seeks to ensure sustainable use of natural resources, enhance environmental security, and improve public access to and engagement with nature, while supporting economic growth. A key objective is to move from high-level ambition to clear delivery, with defined responsibilities, statutory Environment Act targets, and improved monitoring and accountability,	The SEA should seek to maintain or enhance the quality of the natural environment.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
delivered collaboratively across government, businesses, land managers and communities.	
Defra (2025) Natural Capital and Ecosystem Assessment (NCEA)	
NCEA has established natural capital monitoring as a national strategic capability and is: • increasing quantity, quality and relevance of environmental data, evidence and systems-level insights to inform ambitious, proactive and sustainable decisions • improving how environmental data, evidence and insight are used in government decisions • enabling businesses, the public, and others to make informed decisions affecting the environment • successfully moving to a sustainable funding and delivery model to ensure the long-term impact of NCEA	While a full ecosystem services approach is not integrated into the SEA, relevant services are addressed through objective-led assessment. These include: **Provisioning Services**: Freshwater, Biodiversity **Regulating Services**: Water Regulation **Cultural Services**: Recreation and ecotourism, Cultural heritage values, Aesthetic The SEA should ensure the Drought Plan affects these services in the least damaging way by informing the formulation and selection of drought management options.
Defra (2011) Mainstreaming Sustainable Development	
This document sets out the Government's vision for mainstreaming sustainable development in relation to the operation of its buildings and estates, including the goods and services that it buys and the policies it makes. It builds on the principles that underpinned the UK's 2005 sustainable development strategy and highlights that long term economic growth relies on protecting and enhancing the environmental resources that underpin it, and paying due regard to social needs. It sets out measures to achieve the mainstreaming of sustainable development, which include ministerial leadership and oversight; leading by example; embedding sustainable development in government policy; and transparency and independent scrutiny.	The DP should seek to be aligned with the principles of sustainable development. The SEA assessment framework should include objectives relating to the principles of sustainable development, including communities, economy, and environment.
Defra (2025) National Policy Statement for Water Resources Infrastructure	
The Statement establishes a framework for nationally significant water projects, with objectives to deliver resilience to drought and climate change, safeguard biodiversity and ecological flows, and ensure that new infrastructure contributes to sustainability and national priorities for growth, health, and environmental protection.	The Drought Plan should take into account the contents of this policy statement.
Defra, Environment Agency, and Welsh Government (2021) River Basin Planning Guidance (2021)	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
The updated guidance reflects advances in evidence, policy, and regulatory requirements, providing a refreshed framework for river basin planning. It sets out principles for adaptive management, embedding climate resilience, biodiversity protection, and sustainable development into water planning. The guidance ensures alignment with national strategies for water resources and flood risk, and requires clear, transparent processes for assessing pressures, setting objectives, and monitoring progress across England and Wales.	The DP should consider the findings of the updated guidance, ensuring that drought measures align with river basin planning priorities and contribute to achieving good ecological status. The SEA should note the impact of the DP on water bodies and habitats, recognising the importance of integrating drought actions with climate resilience, biodiversity protection, and sustainable water management.
Defra (2012) National Policy Statement for Waste Water	
National Policy Statement (NPS) sets out Government policy for the provision of major waste water infrastructure. It will be used by the Infrastructure Planning Commission (IPC) to guide its decision making on development consent applications for waste water developments that fall within the definition of Nationally Significant Infrastructure Project (NSIP) as defined in the Planning Act 2008.	The SEA should seek to ensure the Drought Plan 2027 considers any unforeseen NSIP proposals that come forward prior to adoption which may affect water resources in the Thames Water area.
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 Drought Plan 2027 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 (2023) Statutory Biodiversity Metric: Tools and Guides	
The tools and guides establish the statutory framework for measuring biodiversity in England, reflecting the requirements of the Environment Act 2021 and the principle of biodiversity net gain. They provide a standardised method for assessing habitat quality and distinctiveness, ensuring that development projects deliver measurable improvements for nature. The guidance sets out how biodiversity value should be calculated, how losses must be compensated, and how long-term gains are secured, embedding biodiversity into planning and infrastructure decisions.	The DP should consider the findings of the statutory biodiversity metric, ensuring that drought measures and infrastructure projects deliver measurable biodiversity gains and do not compromise habitat quality. The SEA should note the impact of the DP on habitats and species, recognising the importance of applying the biodiversity metric to assess losses and gains, and ensuring that drought actions contribute to net gain and ecosystem resilience.
Defra (2024) Understanding Climate Adaptation and the Third National Adaptation Programme (NAP3)	
The third programme provides the current framework for climate adaptation in England, reflecting updated evidence from the latest CCRA. It sets out a comprehensive package of measures to address climate risks such as flooding, drought, overheating, and biodiversity loss. NAP3 emphasises systemic resilience, integration of adaptation into economic and social policy, and stronger monitoring	The DP should ensure that proposals are resilient to the effects of climate change. Where possible, options should be considered that enhance resilience. The SEA should consider the effects of options on climate change resilience.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
and accountability. It highlights the importance of nature-based solutions, investment in infrastructure, and community preparedness to ensure that adaptation supports both environmental sustainability and societal wellbeing.	
Defra (2014) River Basin Planning Guidance	
Aims to give guidance on practical implementation of the Water Framework Directive (WFD). The river basin planning process involves setting environmental objectives for all groundwater and surface waters (including estuaries and coastal waters) within the river basin district, and devising programmes of measures to meet those objectives.	The Drought Plan 2027 should take into account the contents of this statutory guidance.
Defra (2015) The government's response to the Natural Capital Committee's third State of Natural Capital report	
This provides a number of recommendations such as: Agreement for the development of a 25 year plan for a healthy natural economy. This includes helping organisations understand the economic, social and cultural value the impact their actions have on it and how to use the knowledge for better decisions; identify most important and threatened environmental assets; protection of designated areas; address outstanding monitoring and data issues to enable better decisions about strategic investments in natural capital. Assigning institutional responsibility for monitoring the state of natural capital. Organisations that manage land and water assets should create a register of natural capital for which they are responsible.	Outputs from the SEA process will help to inform any future potential development by Thames Water of Natural Capital Accounting approaches to assessing environmental asset performance. Government (led by HM Treasury and Defra) is increasingly using NCA to support future environmental policy and decision-making, and there may be future expectations on water companies to follow suit.
Defra (2015) The Great Britain Invasive Non-native Species Strategy	
The Strategy is intended to provide a strategic framework, updated from the 2008 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.	The implementation of the DP may influence biodiversity in the region and as such the SEA should seek to maintain or enhance the quality of habitats and biodiversity.
Defra (2025) Drought Plan Direction 2025	
Sets out the timescales for water companies to develop and consult on Drought Plans. The direction is currently in the process of being updated for the next iteration of drought plans and is anticipated to be published later this year.	The DP SEA will take account of the statutory requirements of this and any updated Direction, where relevant.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
Defra and Environment Agency (2025) Water Company Drought Plan Guideline	
This sets out how to assess the environmental effects of actions to maintain supply and how to mitigate. An environmental assessment must include details of changes as a result of actions to: • Water flow or level regimes • Water quality • Ecology (sensitive features, habitats and species) • Designated sites (habitats and species) • Fish populations (in particular migratory fish) Additionally, an assessment must include effects on WFD status and consider effects on river basin management plans. Assessments should also take into account the Handbook for Scoping Projects: Environmental Assessment and the EcIA Guidelines. For SEAs of a DP, guidance should be followed in the DCLG (2005) Practical Guide to the Strategic Environmental Assessment Directive and UKWIR (2012) Strategic Environmental Assessment and Habitats Regulations Assessment: WRMPs and DPs. Need to identify what needs to be done to mitigate or reduce adverse effects and provide compensation for effects that remain following mitigation. This includes the identification of pre-drought, in-drought and post drought mitigation actions.	The SEA must take into account the approach to environmental assessment and what needs to be done to mitigate or reduce adverse effects and provide compensation for effects that remain following mitigation.
Environment Agency (2024) Environmental assessment for water company drought planning supplementary guidance, Consultation draft	
This supplements the guidance provided on how to write and publish a drought plan. It provides technical guidance on how to develop an environmental assessment for supply side drought management actions to support a Drought Plan. It includes the need to consider whether an SEA is required for a drought plan.	The Drought Plan and SEA need to take account of the guidance provided by the Environment Agency
Defra (2020) Enabling a Natural Capital Approach (ENCA)	
ENCA resources are a mixture of data, guidance and tools that enable individuals/organisations to understand natural capital and know how to take it into account. The aims of ENCA are to: • Build capacity among users to assess and value the natural environment by providing comprehensive information and resources	The SEA will help to inform future development by Thames Water and therefore should consider the effect of the drought options on opportunities for natural capital.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
• Reduce search costs for analysts and decision makers • Provide a platform to update tools and guidance as knowledge develops • Identify new evidence and areas for development The guidance is a comprehensive document providing information and resources for Natural Capital, covering the natural capital framework, economic valuation of the environment, how project or policy appraisal can incorporate natural capital, natural capital accounting principles and methods, benefits and challenges and applying natural capital at a local level.	
Defra (2025) Marine Strategy Part Three: 2025 UK Programme of Measures	
The programme of measures establishes the current statutory framework for delivering GES in UK waters, setting out specific actions to address pressures such as overfishing, pollution, climate change, and habitat degradation. It details regulatory, policy, and practical interventions across sectors including fisheries, shipping, energy, and conservation. The programme embeds biodiversity protection, climate resilience, and sustainable use of marine resources into national policy, ensuring that the UK's seas are managed to support both environmental health and economic activity.	The DP should consider the findings of the Marine Strategy, ensuring that drought measures do not compromise marine ecosystems and align with national commitments to GES. The SEA should note the impact of the DP on coastal and marine habitats, recognising the importance of integrating drought actions with biodiversity protection, pollution reduction, and sustainable resource management.
Department for Transport (2022) UK Electric Vehicle Infrastructure Strategy	
This strategy sets out the Department for Transport's vision and action plan for the rollout of electric vehicle charging infrastructure in the UK, ahead of the phase out dates. They intend: to end the sale of new petrol and diesel petrol and diesel vehicles by 2030 for all new cars and vans to be fully zero emission at the tailpipe by 2035	The DP should consider use of zero emission vehicles when delivering options where applicable. The SEA should also promote the use of renewable energy, where relevant.
Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government) (2014) National Planning Policy for Waste	
Sets out detailed waste planning policies for local authorities. States that planning authorities need to: Use a proportionate evidence base in preparing Local Plans Identify sufficient opportunities to meet the identified needs of their area for the management of waste streams Identify suitable sites and areas for waste facilities	The DP may need to consider the potential impact of options on waste generation and on waste management facilities in the DP area. The SEA should consider the effects of the DP on waste generation and management capacity.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2015) Renewable and Low Carbon Energy	
Increasing the amount of energy from renewable and low carbon technologies will help to make sure the UK has a secure energy supply, reduce greenhouse gas emissions to slow down climate change and stimulate investment in new jobs and businesses. Planning has an important role in the delivery of new renewable and low carbon energy infrastructure in locations where the local environmental impact is acceptable.	The DP should, where possible, contribute towards increasing the proportion of energy from renewable energy sources. The SEA assessment framework should include consideration of the use of energy from renewable energy sources.
Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local (2023) National Planning Policy Framework (NPPF)	
The NPPF sets out the Government's planning policies for England and how these are expected to be applied. The National Planning Policy Framework 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 NPPF is a presumption in favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision-taking. The NPPF requires that the planning system should be genuinely plan-led and that plans should: • be prepared with the objective of contributing to the achievement of sustainable development; • be prepared positively, in a way that is aspirational but deliverable; • be shaped by early, proportionate and effective engagement between planmakers and communities, local organisations, businesses, infrastructure providers and operators and statutory Consultees; • contain policies that are clearly written and unambiguous, so it is evident how a decision maker should react to development proposals; • be accessible through the use of digital tools to assist public involvement and policy presentation; and serve a clear purpose, avoiding unnecessary duplication of policies that apply to a particular area (including policies in this Framework, where relevant).	The DP and SEA should take account of the key components of sustainable development and consider the three dimensions to sustainable development: economic, social and environmental.
Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local (various) Planning Practice Guidance	
Planning Practice Guidance (PPG) is designed to support the NPPF. It reflects the objectives of the NPPF which are not repeated here. PPG provides additional	The DP should take into consideration guidance set out in the PPG insofar as it relates to the area covered by the DP.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
planning guidance on a number of topics. Those that are particularly relevant to the DP include: • Air quality; • appropriate assessment; • climate change; • effective use of land; • flood risk and coastal change; • healthy and safe communities; • historic environment; • natural environment; • open space, sports and recreation facilities, public rights of way and local green space; • strategic environmental assessment and sustainability appraisal; and, • water supply, wastewater and water quality.	
Environment Agency (2013), *Managing Water Abstraction*	
This sets out how the EA manages water resources in England and Wales.	The SEA should consider the range of impacts that changes to abstractions could have on the environment, including water bodies, biodiversity, and water users.
Environment Agency (2025) National Framework for Water Resources 2025: Water for Growth, Nature and a Resilient Future	
The framework provides a national plan for water resources, setting out how England will meet future needs for growth, nature, and resilience. It considers the challenges of climate change, drought, and population pressures, and establishes principles for regional water resource planning, infrastructure investment, and environmental protection. The framework aims to deliver secure supplies for people and businesses, safeguard ecological flows and biodiversity, and ensure that water resource management supports sustainable growth and climate adaptation.	The DP should consider the findings of the National Framework, ensuring that drought measures align with national priorities for resilience, growth, and environmental protection. The SEA should note the impact of the DP on water resources and habitats, recognising the importance of integrating drought actions with biodiversity, ecological flows, and long-term sustainability.
Environment Agency (2019) State of the Environment: Soil	
The assessment provided an updated evidence base on the condition of soils in England, showing widespread degradation from erosion, compaction, loss of organic matter, and pollution. It highlighted the consequences for food security, water quality, biodiversity, and climate resilience, and stressed the urgency of improving soil management. The assessment set out priorities for monitoring, policy integration, and practical measures to restore soil health, embedding soils more firmly into environmental and agricultural strategies.	The DP should consider the findings of the soil assessments, ensuring that drought measures do not exacerbate soil degradation and instead promote sustainable land management. The SEA should note the impact of the DP on soil health, recognising the importance of integrating drought actions with biodiversity protection, water quality, and climate resilience.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
Environment Agency (2004) *Catchment Flood Management Plans: Guidelines – Volume 1 Policy*	
These guidelines support the EA's strategy for flood risk management and work towards achieving the government's strategy for flood and coastal erosion flood risk management. The aims of Catchment Flood Management Planning is: • To promote sustainable flood risk management measures • To reduce the sources of flooding and harm to people, and the natural, built and historic environment caused by floods • To support the delivery of the Government's and others' policies and targets, and the Environment Agency's environmental vision.	The DP links to this plan where it affects flood risk or land management, for example through changes in abstraction or water storage. The SEA should consider how the DP may affect flood risk across the region.
Environment Agency (2020) National Flood and Coastal Erosion Risk Management Strategy for England	
This updated strategy describes what needs to be done by all risk management authorities, including water and sewerage companies, involved in flood and coastal erosion risk management. It has 3 long-term ambitions: 1. Climate resilient places: improving resilience to flooding and coastal change; 2. Making the right investment and planning decisions to secure sustainable growth, environmental improvements and infrastructure resilient to flooding and coastal change; and Educating local communities to make sure that they understand their risk to flooding and coastal change.	The SEA should ensure the Drought Plan 2027 takes into consideration the long-term ambitions included in this document and contributes to the reduction in flood risk and coastal erosion.
Environment Agency, Office for Water Services and Natural Resources Wales (2023) Water resources planning guideline	
This guideline is relevant to water companies in England and Wales. It is also relevant to those producing regional plans. This guideline is designed to help water companies in England or Wales write a WRMP and/or Regional Plan that complies with all the relevant statutory requirements and government policy.	The SEA should seek to ensure that water supplies and resources are maintained or enhanced in line with the Water Resources Planning Guideline.
Environment Agency and other Lead Authorities, *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	The SEA should seek to promote a reduction of the risks identified in the Shoreline Management Plans.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
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 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.	
Environment Agency (2022) River Basin Management Plans: 2022 Update	
Sets out updated plans for managing the water environment in England under the Water Framework Directive (WFD). It builds on previous characterisation work to assess pressures, set environmental objectives, and outline measures to improve the ecological and chemical status of rivers, lakes, estuaries, and coastal waters.	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.
Green Infrastructure Strategies (various)	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
The strategies guide greener urban development with principles, standards, and mapping tools for planners, developers, and communities to create nature-rich spaces with multiple benefits. There are several GI Strategies in the Thames Water area, inclduing: West of England Combined Authority Joint Green Infrastructure Strategy Worcestershire Green Infrastructure Strategy Wiltshire Council Green Blue Infrastructure Strategy Hertfordshire Green Infrastructure Strategy Essex Green Infrastructure Strategy London Green Infrastructure Framework The general objectives of these strategies are: Enhance biodiversity and restore habitats to support nature recovery and ecological connectivity. Boost climate resilience through flood mitigation, water management, and sustainable drainage systems. Improve access and connectivity by creating green and blue corridors for recreation and active travel. Promote health and well-being with inclusive, high-quality green spaces for communities. Integrate GI into sustainable growth by embedding it in planning and development strategies.	The DP may impact the objectives of some GI Strategies in the TW area. The SEA should note which objectives will be impacted. s.
Historic England (2022) Historic England Climate Change Strategy	
The strategy sets out Historic England's current approach to addressing climate change, embedding adaptation and mitigation into heritage management. It outlines priorities for reducing carbon emissions from the historic environment, enhancing resilience of heritage assets, and promoting the role of heritage in supporting climate action. The strategy emphasises collaboration with communities, policymakers, and practitioners, ensuring that heritage contributes to sustainable development and climate resilience while being protected for future generations.	The SEA should seek to assess the implications of the DP in combination with climate change and the potential impacts on heritage and the historic environment.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
Historic England (2016) Historic England Advice Note 8: Sustainability Appraisal and Strategic Environmental Assessment	
Guidance for addressing the historic environment in Strategic Environmental Assessment or Sustainability Appraisal. It identifies the recommended list of plans, programmes and policies for review, approach to baseline review, potential sustainability issues.	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 paleo-environmental deposits. Historic characterisation can supplement information about designations. Sustainability issues, objectives and indicators identified in this document should be taken into account in the SEA.
Historic England (2017) The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (Second Edition)	
The updated guidance refined and expanded the earlier advice, providing clearer definitions, case studies, and methodologies for assessing setting. It emphasised the importance of considering cumulative change, visual and non-visual factors, and the dynamic nature of setting. The second edition strengthened the link between setting and significance, ensuring that planning decisions were better informed and more consistent in protecting heritage assets.	The SEA should take into account effects on settings of heritage assets.
Historic England (2023) Heritage at Risk	
Heritage at Risk is a national project that aims to identify the endangered sites (historic buildings and places with increased risks of neglect and decay) and then help secure them for the future. Regional Heritage at Risk Registers were most recently published in 2023.	The SEA should seek to protect and enhance heritage and landscape.
Historic England (2024) Heritage Counts: Historic Environment Overview 2023-24	
This document outlines the significant developments and showcases the efforts in preserving, celebrating and adapting the historic environment for current and future generations.	The SEA should consider the information set out in this report and seek to protect the historic environment.
Historic England (2015) The Historic Environment in Local Plans Historic Environment Good Practice Advice in Planning: 1	
This provides guidance on incorporating the historic environment into local planning processes. This advice supports the National Planning Policy Framework's objective to conserve and enhance the historic environment by assisting local planning authorities in developing policies and making decisions that appropriately address heritage assets.	The SEA should consider the information set out in this report and seek to protect the historic environment.
Flood and Water Management Act, 2010 as amended	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
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 groups and individuals, and help ensure continuity of water supplies to the consumer.	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.
Greater London Authority (GLA) (2018) London Environment Strategy	
This narrative provides an integrated overview of London's environmental challenges and opportunities, combining biodiversity with air quality, green infrastructure, climate resilience, and resource management. It considers the ecological role of London's parks, rivers, wetlands, and green spaces, the pressures from population growth, urbanisation, and climate change, and the principles of sustainable city management. It sets out the Mayor's vision for a greener, healthier London, with objectives to protect and enhance biodiversity, expand green infrastructure, improve ecological connectivity, and ensure that environmental policies contribute to public health, wellbeing, and climate adaptation.	The DP should consider the findings of the London Environment Strategy, ensuring that drought measures safeguard biodiversity, green infrastructure, and ecological connectivity within the capital. The SEA should note the impact of the DP on urban habitats and species, recognising the importance of integrating water resilience with biodiversity protection, climate adaptation, and public health outcomes in London.
HM Government (1975) Reservoirs Act	
The Reservoirs Act 1975 provides a legal framework to ensure the safety against failure of large raised reservoirs. The act applies to reservoirs that hold at least 25,000 cubic metres of water above natural ground level. Safety legislation for reservoirs in the United Kingdom was introduced in 1930 after several reservoir disasters had resulted in loss of life. This law was superseded by the Reservoirs Act 1975. Under the Reservoirs Act 1975 reservoir owners (undertakers) have ultimate responsibility for the safety of their reservoirs. Reservoir owners must appoint a panel engineer (a specialist civil engineer who is qualified and experienced in reservoir safety) to supervise the design and construction of the reservoir, to continuously supervise the reservoir when built (supervising engineer) and to carry out periodic inspections (inspecting engineer).	The DP should consider any effects of options on reservoirs capacity, functioning and downstream flows.
HM Government (1975) Salmon and Freshwater Fisheries Act 1975	
The act encompasses fishing regulation, as well as illegal obstruction of migratory pathways and prohibited modes of destroying fish. The act allows the salmon to maintain an environmentally stable population and support the fishing industry.	The SEA and DP should consider the protection of salmon and freshwater fish.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
HM Government (1979) Ancient Monuments and Archaeological Areas Act 1979	
The Act defines sites that warrant protection as ancient monuments. They can be a Scheduled Monuments or "any other monument which in the opinion of the Secretary of State is of public interest by reason of the historic, architectural, traditional, artistic or archaeological interest attaching to it".	The DP is unlikely to impact on Scheduled Monuments, however, the SEA assessment framework should include consideration of Scheduled Monuments
HM Government (1981) *Wildlife and Countryside Act, 1981*	
The Act is the principle mechanism for providing legislative 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.	Some aspects of the DP may have effects on habitats and species in the Thames Water supply area and beyond. The SEA should seek to maintain or enhance the quality of habitats and biodiversity, and take regard of protected species and habitats.
HM Government (1990) Planning (Listed Buildings and Conservation Areas) Act 1990	
This addresses listed buildings including prevention of deterioration and damage and preservation and enhancement of conservation areas.	The DP and SEA should take account of the need to protect listed buildings and conservation areas.
HM Government (1990) Environmental Protection Act	
The Act defines the legal framework for England, Wales and Scotland regarding environmental protection, including the duty of care for waste, contaminated land, and statutory nuisance. Under the Act, Local Authorities or private individuals may take action to secure abatement of any such nuisance, such as noise, and only one person need be affected for action to be possible. It also specifies offences related to the storage, movement, treatment or disposal of controlled waste, and sets out the regime for identifying and remediating contaminated land.	The DP must ensure compliance with the Act. The SEA assessment framework should include waste and nuisance.
HM Government (1990) Town and Country Planning Act 1990	
The Town and Country Planning Act controls and consents development, which is defined as building, engineering, mining or other operations in. on, over or under land, or the making of any material change in the use of any building or land.	The DP must ensure full compliance with the Act. The SEA should include objectives and guide questions relating to biodiversity, land use, and landscape.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
HM Government (1991) Water Industry Act 1991 was amended by the commencement of Section 36 of the Flood and Water Management Act 2010	
This makes provision for general duties of water undertakers including those associated with water resources management plans and sets out supply duties.	The DP must take into account this legislation.
HM Government (2009) 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 SEA should include objectives that cover hydromorphological aspects and seek to ensure that hydromorphological features within the plan are maintained or enhanced.
HM Government (1991 and 1994) Land Drainage Act	
The Land Drainage Act 1991 requires that a watercourse be maintained by its owner in such a condition that the free flow of water is not impeded. The riparian owner must accept the natural flow from upstream but need not carry out work to cater for increased flows resulting from some types of works carried out upstream, for example a new housing development. If a riparian owner fails to carry out his responsibilities under the Land Drainage Act, or if anyone else causes a watercourse to become blocked or obstructed, the County and District Councils have powers of enforcement by serving a notice under the Act. If this is ignored, the Council concerned may carry out the necessary itself and then recharge the person responsible for the full cost incurred. The District Council normally implements these powers but the County Council will deal with problems that affect the highway. The person responsible may also be prosecuted for nuisance under the Public Health Act 1936. The 1994 Act amends the Land Drainage Act of 1991 in relation to the functions of internal drainage boards and local authorities.	The DP should be prepared in accordance with the act.
HM Government (1994) The Conservation (Natural Habitats, &c.) Regulations 1994	
These regulations transposed European Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) into national law. The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites.	The DP should seek to protect European sites and species. The SEA assessment framework should include objectives and guide questions relating to the protection of European sites and species, as well as biodiversity more generally.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
HM Government (1994) Urban Waste Water Treatment (England and Wales) Regulations 1994	
The Regulations transposed the requirements of the Urban Waste Water Treatment Directive 91/271/EEC (as amended). The Regulations impose requirements for: collection systems for treated urban waste wate; discharges from treatment plants and sets out methods for monitoring; and makes provisions with regard to discharges of industrial wastewater and the dumping of sludge from ships.	The DP should reflect the requirements set out in the regulations.
Four Countries' Biodiversity Group (4CBG) (2024) UK Biodiversity Framework	
The aim of the Framework is to halt and reverse biodiversity loss across the UK, strengthen ecosystem resilience, and contribute to international biodiversity commitments under the Kunming–Montreal Global Biodiversity Framework. It seeks to maintain and, where practicable, enhance: • The extent, condition, and connectivity of ecosystems to support nature recovery and climate adaptation. • Internationally and nationally important species and habitats, ensuring their protection and restoration. • Priority species and habitats identified by each devolved administration, reflecting local ecological distinctiveness. • The integration of biodiversity objectives into water, land-use, and climate policies, ensuring sustainable resource management. • Public awareness and engagement in biodiversity conservation, recognising the health and wellbeing benefits of access to nature.	Ensure that the DP and SEA encourage conservation and offer protection to areas and species of high conservation importance as identified in this action plan.
HM Government (2000) 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	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.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
• Provides better management arrangements for National Landscapes • Strengthens wildlife enforcement legislation.	
HM Government (2002) The National Heritage Act 2002	
This Act builds on the preceding National Heritage Acts of 1980, 1983 and 1997. All four Acts define the way in which National heritage assets are managed and protected. The 2002 Act extended the powers of the Historic Buildings and Monuments Commission to include underwater archaeology within the territorial waters of the United Kingdom.	The DP should be compliant with the Act. The SEA should include objectives relating to the protection of heritage features.
HM Government (2006) Climate Change and Sustainable Energy Act 2006	
The Act was enacted after the publication of the UK Climate Change Programme (2006). It places an obligation on the government to report to Parliament on greenhouse gas emissions in the UK and action taken by Government to reduce these emissions.	The DP should take into account carbon emissions associated with the measures. The SEA could include an objective/guide question in the assessment framework to reduce greenhouse gas/carbon dioxide emissions. Consider whether the monitoring arrangements can be utilised to monitor the effects of the DP.
HM Government (2007) Water Resources Management Plan Regulations 2007	
These Regulations set out the process for the preparation of WRMPs.	The DP should considered these regulations, where relevant.
HM Government (2008) Planning Act 2008	
This Act introduced a new system for nationally significant infrastructure planning, alongside further reforms to the Town and Country Planning system.	The DP should consider any unforeseen NSIP proposals that come forward prior to adoption which may affect water resources in the region. The SEA should consider the cumulative effects of the DP and any unforeseen NSIP proposals that come forward which may affect water resources in the region.
HM Government (2009) Marine and Coastal Access Act 2009	
The Marine and Coastal Access Act sets out a number of measures, including the establishment of Marine Conservation Zones (MCZs) and Marine Spatial Plans. I	The DP should have regard to effects on coastal areas. The SEA should take into account the effects of the measures of coastal environments where relevant.
HM Government (2009) The UK Renewable Energy Strategy	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
The Strategy sets out to: • Put in place the mechanisms to provide financial support for renewable electricity and heat worth around £30 billion between up to 2020; • Drive delivery and clear away barriers; • Increase investment in emerging technologies and pursue new sources of supply; and • Create new opportunities for individuals, communities and business to harness renewable energy.	The DP should contribute towards increasing the proportion of energy from renewable energy sources, where possible. The SEA assessment framework should include consideration of the use of energy from renewable energy sources.
HM Government (2011) Localism Act 2011	
The Localism Act provides greater devolved powers to councils and neighbourhoods and gives local communities more control over housing and planning decisions.	The DP and the SEA Environmental Report will be subject to public consultation.
HM Government (2011) UK Marine Policy Statement	
The Marine Policy Statement (MPS) sets out the framework for preparing Marine Plans and taking decisions affecting the marine environment, supporting the delivery of the following high-level marine objectives: • Achieving a sustainable marine economy; • Ensuring a strong, healthy and just society; • Living within environmental limits; • Promoting good governance; • Using sound science responsibly. • Does not contain any targets.	The DP should take into account its effects on coastal areas. The SEA assessment should take into account the effects of the actions on the coast/marine environment where relevant.
HM Government (2015) Infrastructure Act 2015	
The Infrastructure Act (inter alia) gives environmental authorities new powers to require landowners to take action on invasive non-native species or permit others to enter the land and carry out those operations.	The SEA assessment framework should include guide questions relating to invasive species.
HM Government (2015) The Nitrate Pollution Prevention Regulations 2015	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
These regulations consolidate and revoke previous regulations on Nitrate Pollution Prevention (namely the 2008 Nitrate Pollution Prevention Regulations and subsequent amendments). The continue to provide for the implementation of EU Directive 91/676/EEC on the protection of waters against pollution by nitrates from agricultural sources, and Decision 2009/431/EC granting a derogation under that directive, in England. The regulations: provide for the designation of land as nitrate vulnerable zones; impose annual limits on the quantity of nitrogen from organic manure that may be applied or spread in a holding in a nitrate vulnerable zone; establish requirements relating to the amount of nitrogen to be spread on a crop, and requires an occupier to plan in advance how much nitrogen fertiliser will be spread; require an occupier to provide a risk map of the holding; impose conditions on the spreading of nitrogen fertiliser; establish closed periods during which the spreading of nitrogen fertiliser is prohibited; and, makes provision for requirements for storage of nitrogen fertiliser and the keeping of records.	The DP should have regard to the requirements of the regulations. The DP and the SEA should consider potential effects of DP plan measures on Nitrate Vulnerable Zones.
HM Government (2015) Ozone-Depleting Substances Regulations 2015	
The 2015 ODS Regulations implementation of EU Ozone Depleting Substances Regulations (1005/2009). The principle objective is to phase out and control remaining uses of ozone depleting substances (ODS). ODSs commonly include chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs) and halons, which were typically used as refrigerants, air-conditioning systems, and fire-fighting equipment. The Regulations place controls and phase-out dates on the Manufacture and supply of ODSs. The Regulations also require ODSs to be removed from refrigeration equipment before such appliances are scrapped. The Regulations specify minimum qualifications for those working on the recovery, recycling, reclamation or destruction of ODS.	The DP should have regard to the requirements of the regulations. The SEA assessment framework should include emissions to air.
HM Government (2016) Environmental Permitting (England and Wales) Regulations 2016 (as amended 2018)	
Provides a system for environmental permits and exemptions for industrial activities, mobile plant, waste operations, mining waste operations, water discharge activities, groundwater activities and radioactive substances activities. It also sets out the powers, functions and duties of the regulators.	The DP should accord with these Regulations.
HM Government (2017) Conservation of Habitats and Species Regulations 2017	
These regulations consolidate all the various amendments made to the Conservation (Natural Habitats) Regulations 1994 in England and Wales.	The DP must fully comply with the Regulations.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
The regulations provide for the designation and protection of 'European sites', the protection of 'European species', and the adaptation of planning and other controls for the protection of European Sites. They are the principal means by which the Habitats Directive is transposed in England and Wales as such its main objective is to promote the maintenance of biodiversity.	The impacts of the DP options on biodiversity and protected species and sites must be considered as part of the SEA.
HM Government (2017, updated 2019) UK Clean Growth Strategy: Leading the way to a low carbon future	
This document affirms the UK's need to pursue de-carbonisation and provides information on how the UK is performing against its targets to become carbon neutral. The document highlights that continued emission reduction needs to continue in the fields of: • Power Sector; • Buildings; • Industry; • Natural Resources; • Transport; and, • Devolved Administrations.	The SEA should have an objective/guide questions relating to sustainable development that references the need to reduce carbon emissions across all sectors.
HM Government (2018) The Water Supply (Water Quality) Regulations 2018	
These regulations address the quality of water supplied by water undertakers, who supply areas mainly or wholly in England. The new Regulations implement Directive 98/83/EC on the quality of water intended for human consumption. Under these Regulations, water undertakers are required to identify the areas that are to be water supply zones on an annual basis. A water supply zone cannot exceed 100,000 in terms of population before the beginning of each year of the supply. The standards of wholesomeness are set out, in respect of water for human consumption, be that through drinking, washing, food preparation or cooking and food production. In order to qualify as wholesome, the water cannot contain any: • micro-organism, other than those listed in the full text of Schedule 1 to the Regulations, or parasite; or • substances, other than those listed in the full text of Schedule 1 to the Regulations.	The DP should consider the Regulations. The SEA should take into account potential effects of the measures on drinking water quality
HM Government (2018) A Green Future: Our 25 Year Plan to Improve the Environment	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
This plan sets out government action to help the natural world regain and retain good health. It aims to deliver cleaner air and water in cities and rural landscapes, protect threatened species and provide richer wildlife habitats – using a natural capital approach to better-inform policy. By adopting the plan, the government aims to achieve clean air; clean and plentiful water; thriving plants and wildlife; a reduced risk of harm from environmental hazards such as flooding and drought; using resources from nature more sustainably and efficiently; and, enhanced beauty, heritage and engagement with the natural environment. In addition, the plan will set out to manage pressures on the environment through; mitigating and adapting to climate change, minimising waste, managing exposure to chemicals and enhancing biosecurity. The six key areas for action are: • Using and managing land sustainably, which includes embedding an 'environmental net gain' principle for development (including housing and infrastructure) • Recovering nature and enhancing the beauty of landscapes • Connecting people with the environment to improve health and wellbeing • Increasing resource efficiency, and reducing pollution and waste • Securing clean, productive and biologically diverse seas and oceans • Protecting and improving the global environment	The DP may influence the environmental benefits and pressures identified in the Environment Plan, such as: • Clean air • Clean and plentiful water • Thriving plants and wildlife • Reducing risks of harm from environmental hazards • Using resources from nature more sustainably and efficiently • Enhancing beauty, heritage and engagement with the natural environment • Mitigating and adapting to climate change • Minimising waste • Managing exposure to chemicals • Enhancing biosecurity The SEA should ensure that the impacts of any drought options on the 25-year goals set out in the Environment Plan are fully considered, whilst taking into account environmental net gain and natural capital approach, which the government have identified as principle themes.
HM Government (2019) the Invasive Alien species (Enforcement and Permitting) Order 2019	
This Order allows for the enforcement of the EU Invasive Alien Species Regulation 1143/2014 on the prevention and management of invasive alien plant and animal species in England and Wales, including the relevant licenses, permits and rules for keeping invasive alien species.	The SEA should seek to address any potential issues or effects on existing measures to address invasive alien species.
HM Government (2020) The Agriculture Act 2020	
The Bill provides the legislative framework for replacement agricultural support schemes to replace the European schemes after UK's exit from the EU and the EU's Common Agricultural Policy (CAP). The Bill provides powers to implement new approaches to farm payments and land management. In England, farmers will be paid to produce 'public goods' such as environmental or animal welfare improvements. The Bill also includes wider	The DP should consider the implications of the act.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
measures, including on improving fairness in the agricultural supply chain and on the operation of agricultural markets.	
HM Government (2021) The Environment Act 2021	
The Act seeks to set legislation to improve air and water quality, tackle waste, increase recycling, halt the decline of species, and improve the natural environment. Amongst its provisions, The Act places a duty enshrined in law to ensure water companies secure a progressive reduction in the adverse impacts of discharges from storm overflows. New duties will also require the government to publish a plan to reduce sewage discharges from storm overflows by September 2022 and report to Parliament on the progress towards implementing the plan. The Environment Act also includes a legally binding target on species abundance for 2030, to help reverse declines of species like the hedgehog, red squirrel and water vole.	The DP should seek to protect and enhance the natural environment, taking into consideration the principals and guidance set out through the Environment Bill.
HM Government (2022) UK Climate Change Risk Assessment 2022	
This report outlines the UK government and devolved administrations' position on the key climate change risks and opportunities that the UK faces today. As required by the Climate Change Act 2008, the UK government has undertaken the third five-year assessment of the risks of climate change on the UK. This is based on the Independent Assessment of UK Climate Risk, the statutory advice provided by the Climate Change Committee (CCC), commissioned by the UK government and devolved administrations. The risk assessment considers sixty-one UK-wide climate risks and opportunities cutting across multiple sectors of the economy and prioritises eight risk areas for action in the next two years.	The DP and the SEA should take into consideration the climate risks identified by the assessment.
HM Government (2023) The Energy Act 2023	
The Energy Act provides a comprehensive new legislative regime for energy production, energy security and the regulation of the UK energy sector. The Act aims to deliver "a cleaner, more affordable and more secure energy system for the long term", having been described by the UK government as "the most significant piece of energy legislation in a generation".	The implementation of the Drought Plan 2027 may have an influence upon Thames 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.
HM Treasury (2015) Fixing the Foundations: creating a more prosperous nation.	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
This document sets out a 15-point plan that the government will put into action to boost the UK's productivity growth, centred around two key pillars: encouraging long-term investment, and promoting a dynamic economy. It sets out the government's long term strategy for tackling the issues that matter most for productivity growth.	The DP should have regard to the points included in the plan
HM Treasury (2020) Natural Infrastructure Strategy	
This Strategy sets out the government's plans to deliver on their ambition for a radical improvement in the quality of the UK's infrastructure and to put the UK on the path to net zero emissions by 2050. The planned investment in the water and flood risk management sector is illustrated in light of the 25 Year Environmental Plan and the second National Adaptation Programme.	The decision-making process for determining which schemes should be prioritised in the DP should take this policy document into account.
JNCC, Defra, DAERA (Northern Ireland), Scottish Government, Welsh Government (2024) UK Biodiversity Framework (UKBF)	
The framework sets out the UK's strategic approach to halting biodiversity loss and delivering nature recovery, replacing earlier national and devolved biodiversity strategies. It aligns with the Kunming-Montreal Global Biodiversity Framework and sets a vision for 2050 in which biodiversity is valued, restored, and sustainably managed. Its priorities are structured around global commitments, shared UK goals, evidence and monitoring, and coordinated delivery across the four nations.	The DP should support the protection and enhancement of biodiversity. The SEA assessment should include criteria relating to the protection of species and habitats.
National Infrastructure Commission (2018) Preparing for a Drier Future, England's Water Infrastructure Needs	
This paper sets out a range of measures that the NIC believe government, water companies and the regulator should take to increase investment in supply infrastructure and encourage more efficient use of water, with the aim to halve leakage by 2050, extend metering and develop plans for a national water network.	The DP should take these measures into account where possible and aim to improve water efficiency.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
HM Government (2006) 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 has a general purpose to ensure the natural environment is conserved, enhanced and managed for the benefit of present and future generations, thereby contributing to sustainable development. Section 40 places a duty to conserve biodiversity on public authorities which may include enhancing, restoring or protecting a population or habitat. This duty extends to the list of species and habitats published in Section 41 of the Act and also applies to Local Wildlife Sites.	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.
HM Government (1975) 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 Government (2015) The Environmental Damage (Prevention and Remediation) (England) Regulations 2015	
These regulations amend the 2009 regulations and 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	The SEA should seek to ensure that the guidance provided by the regulations is considered when assessing the DP.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
• 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.	
HM Government (2009) The Eel (England and Wales) Regulations 2009	
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 SEA should seek to maintain or enhance the quality of habitats and biodiversity, and take regard of protected species identified. This should include migratory fish species and their migratory passage.
Natural England (2025) 'Natural England's Strategy: Recovering Nature for Growth, Health and Security	
This narrative provides an overview of circumstances relating to the recovery of nature in England, considering its role as essential national infrastructure for growth, health, and security. It reflects the ecological functions of terrestrial, freshwater, coastal, and marine systems, the pressures they face from climate change, land use, and human activity, and the principles that should guide their restoration and management. It highlights the respective roles of government, regulators, businesses, and communities in delivering systemic, landscape-scale recovery, ensuring that ecosystems continue to provide food, water, climate regulation, and wellbeing benefits.	The DP should consider the findings of the narrative relating to conservation. The SEA should note the impact of the DP on various habitats.
HM Government (2003) 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 promotion of water conservation.	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.
HM Government (2017) The Water Environment (Water Framework Directive) (England and Wales) Regulations	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
The Water Framework Directive (WFD) established a legal framework for managing the water environment across Europe. The requirements of this are set out in domestic law under these regulations. The overall aims are the sustainable use of water, preventing deterioration of water body status and the protection and improvement of inland surface waters, groundwater and transitional and coastal waters. River Basin Management Plans set out how these requirements will be delivered.	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.
HM Government (2025) Water (Special Measures) Act 2025	
This Act introduces targeted reforms to improve environmental performance and accountability within the UK water sector. It includes the following key objectives: • Strengthen regulatory oversight of water companies by expanding the powers of Ofwat and the Secretary of State to intervene when performance standards are not met. • Improve environmental outcomes, especially around pollution incidents and storm overflows, through mandatory pollution reduction plans and tighter controls on emergency discharges. • Promote nature-based solutions for water management, encouraging sustainable approaches that support biodiversity and reduce reliance on hard infrastructure. • Mandate climate change considerations in water sector regulation, requiring Ofwat to factor in long-term climate resilience in its decisions. • Enhance transparency and governance, including new rules on executive remuneration, board accountability, and financial reporting for water companies. • Restore public trust in the water industry by addressing illegal sewage spills, infrastructure failures, and perceived regulatory gaps. • Support infrastructure resilience and investment to ensure reliable water supply and wastewater services, especially under environmental stressors like drought.	The DP and SEA should seek to promote the protection of water resources and promote climate resilience.
HM Government (2025) Draft Planning and Infrastructure Bill	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
The Bill aims to streamline the planning system while strengthening environmental accountability. It covers: • Infrastructure delivery: Provisions to accelerate major infrastructure projects. • Town and country planning: Updates to planning procedures and decision-making frameworks. • Nature restoration levy: A new charge administered by Natural England, payable by developers to support ecological recovery. • Development corporations: Expanded powers and clearer governance for bodies overseeing large-scale development. • Compulsory purchase: Reforms to land acquisition processes to support infrastructure and regeneration. • Environmental Outcomes Reports (EORs): A new system to replace Environmental Impact Assessments (EIAs) and Strategic Environmental Assessments (SEAs), focusing on measurable environmental results.	The DP should consider the implications of the Bill.
HM Government (2023) Levelling Up and Regeneration Act 2023	
This Act aims to reduce regional inequalities across the UK. It requires government to set and report on progress towards levelling-up missions, devolve powers to local authorities, and reform planning to support regeneration and fairer opportunities nationwide.	The DP could impact some objectives of this act. The SEA should note which objectives of the act may be impacted by the DP and potential interactions, particularly where planning policies affect regeneration, local empowerment, or infrastructure delivery.
Natural England (2011) UK Geodiversity Action Plan (UKGAP)	
The UKGAP sets out of framework for geodiversity action across the UK. It provides a shared context and direction for the protection and enhancement of geodiversity through a common aim, themes, objectives and targets which link national, regional and local activities. The UKGAP consists of six broad themes: 1. Furthering our understanding of geodiversity 2. Influencing planning policy, legislation and development design 3. Gathering and maintaining information on our geodiversity 4. Conserving and managing our geodiversity 5. Inspiring people to value and care for our geodiversity 6. Sustaining resources for our geodiversity	The DP should have regard to the aims and objectives of the UKGAP. The SEA framework should consider effects of options on geodiversity and outline enhancement and mitigation opportunities where these are identified.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
Ofwat (2016) Water 2020	
This document sets out Ofwat's decisions on the design of its water and wastewater services regulatory framework in England and Wales. The approach aims to deliver the following benefits: Greater customer engagement and understanding A sustainable investment model and a fair balance of risk and reward Choice where possible, and ensuring markets are effective for customers A focus on the long-term, targeted and risk-based Support for sustainable improvements in the environment.	The DP should take account of the regulatory framework. The SEA assessment should include criteria relating to the provision of water to customers and environmental protection.
Ofwat (2017) Resilience in the Round	
The report identifies that the water sector has historically invested in options which enhance capacity, especially operational capacity and that whilst additional capacity has an important role in delivering resilience against some threats, companies should start looking at a wider set of factors in order to deliver "smarter" options for the future, including: • Addressing multiple threats through a single intervention. For example, enhancing network connectivity to reduce the number of customers reliant on a single source of supply. This type of approach can provide water supply resilience to multiple threats such as outages, drought and contamination. • Recognising that any intervention will have its own embedded vulnerabilities to future threats. Understanding the vulnerabilities of option types will be critical to planning respective roles in delivering the planned level of resilience. For example, water transfers between areas of surplus and deficit can be a good option but might be vulnerable to wider scale drought impacts and/or contamination.	The DP should consider the content of the report.
UKCIP (2018) UK Climate Projections UKCP18	
The UKCP18 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 DP does take account of UKCP18 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 UKCP18 projections in the broader assessment of climate change

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
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.	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.
UKTAG: Phase 3 Review of Environmental Standards	
UKTAG prepares technical guidance designed to facilitate consistent implementation of the WFD in the UK. This report identifies standards for certain chemicals known as specific pollutants, developments in assessments of risk to groundwater, non-native species, standards for flows in rivers, standards for levels in lakes, standards for acidity in rivers and standards in intermittent discharges.	The SEA should seek to ensure that the guidance provided by the plan are 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.
Environment Agency, Natural England Department for Environment, Food and Rural Affairs, and Office of Water Services (2022) Water Industry Strategic Environmental Requirements (WISER)	
WISER sets out strategic environmental requirements for all English water companies during their business planning cycles. Its purpose is to ensure water companies deliver environmental improvements, meet statutory obligations, and contribute to climate and customer resilience.	The SEA should include consideration of WISER guidance when assessing the DP to ensure consistency with industry-wide environmental priorities.
Waterwise (2017) Water Efficiency Strategy for the UK	
The document sets out a strategy for achieving the vision of a water efficient UK. It suggests policy, regulatory and practical actions that can help in the process of achieving water efficiency.	The DP should take into account their possible impacts on water efficiency and aim to improve water efficiency. The SEA objectives should reflect the need improve water efficiency
Water UK (2016) Water Resources Planning Framework (2015-2065)	
Water UK worked with companies, regulators, academics and NGOs to create this long-term Water Resources Planning Framework. The report breaks new ground by deploying new modelling techniques and by looking 50 years ahead across the whole of England and Wales. This high level strategy and framework considers: • A sector-wide view of future resilience and options for improving that resilience; and	The DP should take into account the considerations of the strategy and framework.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
• An assessment of variation in levels of service and potential minimum levels of service for customers and the environment, accounting for costs and benefits at a national, regional and sub-regional level, which includes the wider social impacts of drought and drought resilience.	
Water UK (2022) Water 2050 – A White Paper	
Water UK has developed this White Paper on behalf of 16 water companies that operate in England. This White Paper describes: • Future challenges, opportunities and gaps and the priority areas for change • Our Vision for 2050 • Why and what we need to change: Delivering more environmental impact more efficiently • Why and what we need to change: Protecting long-term customer interests through the right investments at the right time • How we will make the change happen	The DP should have regard to the water White Paper.
Regional	
AONB Management Units (various) *AONB Management Plans*	
The following management plans for the five AONBs present in the Thames Water area contain objectives associated with conserving and enhancing the AONB: • Chilterns AONB Management Plan 2019-2024 • Cotswolds AONB Management Plan 2018-2023 • Kent Downs AONB Management Plan • North Wessex Downs AONB Management Plan 2019-24 • Surrey Hills AONB Management Plan 2020-2025	The DP operation may have the potential to affect several of the objectives for managing the various AONBs in the Thames area. The SEA should consider the effects of options on landscapes, including designated landscapes.
Environment Agency (2022) Flood Risk Management Plans 2021 to 2027	
The updated plans set out the current framework for managing flood risk, aligning with EU Floods Directive requirements and national strategies. They provide detailed objectives and measures for reducing risk to people, property, and the environment, considering the impacts of climate change, urbanisation, and economic growth. The plans emphasise resilience, adaptation, and investment in infrastructure, while embedding nature-based solutions and community engagement to deliver sustainable flood risk management across England.	The **DP** should consider the findings of the Flood Risk Management Plans, ensuring that drought measures complement flood resilience strategies and do not undermine catchment-scale risk management. The **SEA** should note the impact of the DP on land, water, and communities, recognising the importance of integrating drought actions with climate adaptation, biodiversity protection, and sustainable flood risk planning.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
Environment Agency Area Drought Plans (various)	
Identifies the measures that will be taken by the Environment Agency to plan for and manage droughts.	The DP should take account of relevant measures contained in these plans and the SEA should consider any cumulative effects between the DP and the relevant Environment Agency plans
Environment Agency (2025) Water Industry National Environment Programme (WINEP), National Full data set: Thames Region	
The Water Industry National Environment Programme (WINEP) is the mechanism by which the Environment Agency sets out the measures that it would like water companies to implement to improve the water environment. The WINEP covers both water and wastewater services and the detail in the WINEP enables water companies to include specific measures in their business plans for submission to Ofwat so that the environmental improvements can be funded and delivered in the following Asset Planning Period (AMP). In relation to Water Resources Management Plan 2024, the WINEP sets out a series of investigations for Thames Water to carry out to assess the sustainability of some of its existing water sources and also provides an indication of potential changes to abstraction licence conditions to reduce the reliable supply of water to help protect the water environment.	The DP should take this into account.
The South East England Biodiversity Forum (2009) South East Biodiversity Strategy	
The strategy aims to be a 'clear, coherent and inspiring vision and framework that guides and supports all those who can impact biodiversity in the region'. It recognises biodiversity as an 'integral part of the South East's economy, supporting our livelihood and well being' which needs to be safeguarded in order to achieve sustainable development. It also recognises the need for numerous partners to contribute to the vision.	The DP may have an effect on some of the plan objectives. The SEA should take into account the objective of this strategy.
Marine Management Organisation (2016) South East Marine Plan	
The South East Marine Plan establishes a policy framework to guide decision-making on marine activities and development over the next 20 years. It offers an evidence-based approach to help marine users and regulators determine where, when, and how activities should occur within the south-east marine area. The plan aims to balance environmental, economic, and social considerations while ensuring the sustainable protection and enhancement of the marine environment.	The DP should take this into account.
Environment Agency (2019) Catchment Abstraction Management Strategies (CAMS) (various)	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
Sets out how much water is available for abstraction within the Thames area, taking into account the needs of the environment and existing abstractors. Includes: • Arun and western streams • Bristol Avon, Axe and North Somerset Streams • Cherwell, Thame and Wye • Colne • Cotswolds • Darent • Hampshire Avon • Kennet and Vale of White Horse • Upper Lee • Loddon • London • Medway • Mole • Roding, Beam and Ingrebourne • Severn corridor • Severn Vale • Test and Itchen • Thames Corridor • Upper and Bedford Ouse • Warwickshire Avon • Wey	The DP should be aligned to these objectives.
Environment Agency (2022) Thames River Basin District Flood Risk Management Plan 2021 - 2027	
The objectives include: • Reduce the risk of flooding to communities where possible. • Enhance recreation and general amenity across the river basin.	The DP may have an effect on some of the flood risk management plan objectives. The SEA should include objectives that take into account the objectives where relevant.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
• Ensure development and redevelopment in areas at risk of flooding is appropriate, does not increase flood risk and reduces risk wherever possible. • Promote the use of sustainable drainage systems in development to help reduce pressure on existing drainage networks. • Protect and enhance biodiversity through flood risk management schemes. • Restore naturally functioning river systems where possible. • Promote sustainable land use management to land owners across the catchment to achieve reductions in flood risk.	
Environment Agency and Defra (2022) Thames River Basin District River Basin Management Plan	
Updated as 2009, 2015 plans and superseded by 2022 plans. Reference is made to the environmental objectives of the WFD are: • preventing deterioration of the status of surface waters and groundwater • achieving objectives and standards for protected areas • aiming to achieve good status for all water bodies • reversing any significant and sustained upward trends in pollutant concentrations in groundwater • cessation of discharges, emissions and losses of priority hazardous substances into surface waters • progressively reducing the pollution of groundwater and preventing or limiting the entry of pollutants Environmental objectives are set for each of the protected areas and water bodies in the river basin district.	The DP will need to ensure that it is consistent with the principles of the River Basin Management Plan and that it does not adversely affect the issues identified as significant water management issues.
Environment Agency and Defra (2022) Severn River Basin District River Basin Management Plan	
Updated as 2009, 2015 plans and superseded by 2022 plans. Reference is made to the environmental objectives of the WFD are: • preventing deterioration of the status of surface waters and groundwater • achieving objectives and standards for protected areas • aiming to achieve good status for all water bodies	The DP will need to ensure that it is consistent with the principles of the River Basin Management Plan and that it does not adversely affect the issues identified as significant water management issues.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
• reversing any significant and sustained upward trends in pollutant concentrations in groundwater • cessation of discharges, emissions and losses of priority hazardous substances into surface waters • progressively reducing the pollution of groundwater and preventing or limiting the entry of pollutants Environmental objectives are set for each of the protected areas and water bodies in the river basin district.	
Environment Agency and Defra (2022) Humber River Basin District River Basin Management Plan	
Updated as 2009, 2015 plans and superseded by 2022 plans. Reference is made to the environmental objectives of the WFD are: • preventing deterioration of the status of surface waters and groundwater • achieving objectives and standards for protected areas • aiming to achieve good status for all water bodies • reversing any significant and sustained upward trends in pollutant concentrations in groundwater • cessation of discharges, emissions and losses of priority hazardous substances into surface waters • progressively reducing the pollution of groundwater and preventing or limiting the entry of pollutants. Environmental objectives are set for each of the protected areas and water bodies in the river basin district.	The DP will need to ensure that it is consistent with the principles of the River Basin Management Plan and that it does not adversely affect the issues identified as significant water management issues.
Environment Agency and Defra (2023) Water Resources Planning Guideline (WRPG)	
The guideline provides the current national framework for preparing Water Resources Management Plans and Drought Plans, ensuring consistency, transparency, and alignment with statutory requirements. It sets out principles for long-term resilience, demand management, and environmental protection, while embedding climate adaptation and biodiversity considerations into water planning. The WRPG requires companies to use standardised methods for assessing supply and demand, to coordinate regionally, and to demonstrate how their plans contribute to national priorities for sustainable growth and resilience.	The DP should consider the requirements of the WRPG, ensuring that drought measures are consistent with national guidance and coordinated with adjacent water companies. The SEA should note the impact of the DP on regional water resources and habitats, recognising the importance of aligning drought actions with biodiversity protection, climate resilience, and sustainable supply-demand management.
Environment Agency and Defra (2022) Thames River Basin Management Plan	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
The Plan detailed a five-year programme of work aimed at restoring a self-sustaining salmon population in the River Thames. Eight specific targets were identified, including achieving an average of 250 adult salmon returning to the river each year, and ensuring that fish passes were open throughout the migration period and operated at greater than 95% efficiency. The strategy focused on improving water quality, habitat connectivity, and fish passage, recognising salmon as a flagship species for river health and biodiversity recovery.	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.
Thames Landscape Strategy (2012)	
The plan developed to conserve, enhance, and promote the natural and built heritage of the River Thames corridor between Weybridge, Hampton, and Kew—an area historically known as the Arcadian Thames.	The DP may have the potential to impact on the landscape in its areas of implementation. The SEA will has included an objective on the protection and enhancement of landscape.
Historic England (2023), Heritage at Risk Registers (East of England, London & South East and South West)	
The register is produced annually as part of Historic England's Heritage at Risk programme. It includes buildings or structures, places of worship, archaeological sites, battlefields, wrecks, parks and gardens, and conservation areas known to be at risk as a result of neglect, decay or inappropriate development	It is unlikely the DP will have an effect on the Heritage at Risk Register.
Thames Water Utilities Ltd (2023), Final *Water Resources Management Plan 2024*	
This plan outlines how Thames Water intends to manage water resources across the region. It highlights the challenges facing future water supply and sets out a long-term strategy to continue delivering essential services for all customers, while safeguarding the environment and supporting the economy over the next 50 years.	The DP will take into account the objectives of Thames Water's WRMP.
Thames Water Utilities Ltd (2023) Drainage & Wastewater Management Plan (DWMP) 2023	
This includes a 25-year plan to reduce pressures on Thames Water's wastewater services in the region. It sets the approach and investment needed to deliver a sustainable service that protect the environment. The DWMP aims to • Have less homes that are at risk of flooding than there are now • Improve rivers by reducing the amount of time storm overflows discharge into them • Bring more nature into our towns and cities • Keep customer bills affordable	The DP will take into account the objectives of Thames Water's DWMP.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
Thames Water Utilities Ltd (2025), Our Business Plan 2025 - 2030	
Thames Water's statutory Business Plan to the water regulator, Ofwat.	The DP should take into account the objectives set out in the Business Plan.
Water Company (various) Drought Plans adjacent to supply area	
This looks at the management of water resources to maintain service to customers during drought in the surrounding areas. The plans considered include for the following water companies ; • Affinity Water • Sutton and & East Surrey Water • South East Water • Southern Water • Anglian Water • Severn Trent Water • Wessex Water • Bristol Water	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.
Drainage and Wastewater Management Plans (DWMPs) from adjacent water companies	
These set out the plans to manage and ensure environmentally sustainable wastewater services by companies in adjacent areas, including: • Thames Water • Affinity Water • Sutton and & East Surrey Water • South East Water • Southern Water • Anglian Water • Severn Trent Water	The DP should take these plans into consideration.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
• Wessex Water • Bristol Water	
Water Resources South East (WRSE) Water Resources South East – Regional Plan Final (2024)	
The plan sets out the agreed regional strategy for meeting future water needs, building on the earlier assessment and aligning with national frameworks. It establishes a programme of measures including new reservoirs, transfers, desalination, demand reduction, and leakage control, while embedding biodiversity protection and climate resilience. The plan provides a coordinated approach across the South East, ensuring that water companies deliver consistent, sustainable solutions that balance growth, resilience, and environmental priorities.	The DP and SEA must take into account the work WRSE are doing to increase resilience to drought.
Local	
River Restoration and Water Level Management Plans and Programmes	
There are a number of proposed river restoration projects in the Thames region such as: • The River Restoration Centre (2009) The London Rivers Action Plan • Environment Agency (2006) Bringing your rivers back to life: A strategy for restoring rivers in North London • Land of the Fanns Landscape Partnership Scheme, River Restoration Programme • South East Rivers Trust and Environment Agency, Restoration of the Emm Brook	The DP may have an effect on River Restoration Plans and schemes for non-Natura 2000 sites. The SEA should include objectives that take into account the objectives of these sites where relevant.
Defra (2024) Implementation of UK Eel Management Plans (2020-2023)	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
The UK Eel Management Plans were prepared under the EU Eel Regulation and updated in 2024 to report on delivery and stock assessments. Their central aim is to achieve an escapement of silver eels to the spawning population equal to or greater than **40% of the potential biomass** that would occur under undisturbed conditions (no fishing, no pollution, no barriers to migration). Each plan describes the **nature of the eel population and fishery in its River Basin District**, assesses whether the stock is meeting the 40% escapement target, and sets out **management actions** to secure long-term viability. These actions include: • Improving **fish passage** and reducing barriers to migration. • Regulating and reducing **exploitation** of eel fisheries. • Restoring and protecting **habitats** to support recruitment and migration. • Monitoring escapement levels and reporting progress to Defra and the European Commission. By broadening scope from individual catchments (like the Thames) to all UK RBDs, the Plans provide a **coordinated national framework** for eel recovery.	The SEA should consider the potential impacts of the DP on eel populations and escapement targets.
Mayor of London (2021) The London Plan	
The London Plan 2021 is the Spatial Development Strategy for Greater London. It sets out a framework for how London will develop over the next 20-25 years and the Mayor's vision for Good Growth. The Plan is part of the statutory development plan for London, meaning that the policies in the Plan should inform decisions on planning applications across the capital. Borough's Local Plans must be in 'general conformity' with the London Plan, ensuring that the planning system for London operates in a joined-up way and reflects the overall strategy for how London can develop sustainably, which the	The DP may have an effect on some aspects of the London Plan objectives (such as environmental issues, climate change, air quality and waste). The SEA should include objectives that take into account the objectives and vision of the London Plan where relevant.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
London Plan sets out. The London Plan sets out policies for housing, social infrastructure, economy, heritage and culture, natural environment and green infrastructure and transport.	
Mayor of London (2018) Zero carbon London: A 1.5ºC compatible plan	
This plan sets out some of the most ambitious plans to tackle climate change in the world, making London a zero carbon city by 2050.	Any DP options in the London area should not impact the targets set out in the plan.
Mayor of London (2018) London Environment Strategy	
The first strategy for London of its kind aims to ensure London is greener, cleaner and ready for the future through bringing together approaches to every aspect of London's environment, including: Climate change and energy, Waste, Adapting to climate change, Green infrastructure, Air quality, and Noise The Strategy also publishes progress reports which deliver on the commitment to report on the progress of implementing the Strategy, the latest ('the fourth progress report') was published in 2024.	Options in the DP have potential to cause environmental impacts. The SEA assessment framework should consider the effects of the DP on the achievement of the strategy's key priorities.
Mayor of London (2015) London Infrastructure Plan 2050	
he London Infrastructure Plan 2050 is the first ever attempt to identify, prioritise and cost London's future infrastructure to 2050, given London's growth. Following the release of an update report in early 2015, the plan is helping London work to improve the delivery of London's infrastructure and to make sure London receives the investment it needs to support housing, quality of life and economic growth.	The DP may have an effect on some aspects of the London Infrastructure Plan objectives. The SEA should include objectives that take into account the objectives and vision of the London Infrastructure Plan where relevant
Mayor of London (2011) Securing London's water future: The Mayor's Water Strategy	
Securing London's Water Future: the Mayor's Water Strategy is the first water strategy for London and provides a complete picture of London's water needs. The strategy calls for organisations involved in the city's water management to: • invest in a water management and sewerage infrastructure system that's fit for a world class city and will create jobs • support and encourage Londoners to take practical actions to save water, save energy and save money off their utility bills	The DP may have an effect on water resources. The SEA should take the Mayor's water strategy into account.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
• realise the potential of London's sewerage as an energy resource to help reduce greenhouse gas emissions • work in partnership with the Mayor, boroughs and communities to seek and develop opportunities to manage flood risk through enhancing London's green spaces At a time of decreasing supply and increasing demand for water we need to use the water we have more wisely. The strategy promotes increasing water efficiency and reducing water wastage to balance supply and demand for water, safeguard the environment and help tackle water affordability problems. It also sets out how the Mayor will help communities at risk of flooding to increase their resilience to flooding.	
Biodiversity Action Plans (various)	
Local biodiversity action plan objectives include those associated with maintaining and safeguarding the current extent of protected designations and recognised habitats and achieving favourable status for these areas. The Thames Water assessment area covers many Local BAPs.	The DP may have an effect on BAP objectives. The SEA should include objectives that take into account the objectives of the BAP where relevant (e.g. conservation designation status).
Local Heritage/Conservation Strategies (various)	
Local heritage and conservation strategies emphasise the preservation of cultural identity, promoting sustainable development, and enhancing community well-being. These strategies typically involve a combination of policies, community engagement, financial incentives, and educational initiatives aimed at protecting and revitalising historic sites and traditions.	The SEA should consider the potential effects of the DP on the historic environment. Historic characterisation can supplement information about designations. Sustainability issues, objectives and indicators identified in this document should be taken into account in the SEA
Conservation Area Character Appraisals and Management Plans (various)	
Conservation Area Character Appraisals and Management Plans are used by local planning authorities to identify, assess, and protect the unique architectural and historical significance of designated conservation areas.	The SEA should consider the potential effects of the DP on the historic environment. Sustainability issues, objectives and indicators identified in this document should be taken into account in the SEA
Local Planning Authority (various) Land Use Plans	
The Thames Water area covers a large number of Local Planning Authorities. The main objectives of the existing and emerging Land Use Plans in these areas are related to the sustainable development of the area.	SEA should seek to ensure the DP options should be consistent with the Land Use Plans of those local authorities that will be affected by the option.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
Local Geodiversity Action Plans (LGAPs)	
Local Geodiversity Action Plans (LGAPs) set out actions to conserve, enhance and promote the geodiversity of a particular area. They aim to identify, conserve and enhance the best sites that represent the geological history of an area. They also aim to promote geological sites, provide a local geodiversity audit and influence local planning policy.	DP options should take into account the aims of the LGAPs. The SEA assessment should consider effects of options on geodiversity and outline enhancement and mitigation opportunities where these are identified.
Local Planning Authority (various) Local Plans/Local Development Plans	
The Thames Water assessment area includes a large number of Local Planning Authorities which will all have their own Local Plan / Local Development Plan with visions and objectives specific to their areas.	The DP should take into account the Local Plans and emerging Local Plans. The SEA assessment framework should consider the effects of the DP on the achievement of the Plans' visions and the effects of options on sustainable land use.
Local Nature Recovery Strategies (LNRS) (various)	
Local Nature recovery Strategies are used by local authorities to support the restoration and enhancement of nature. The strategies outline the most valuable existing habitats and presents priorities for reversing the decline in biodiversity. They help achieve national biodiversity targets and commitments under the Environment Act 2021. There are several LNRS in the Thames Water area, including: Gloucestershire Local Nature Recovery Strategy Wiltshire and Swindon Local Nature Recovery Strategy Oxfordshire Local Nature Recovery Strategy Buckinghamshire and Milton Keynes Local Nature Recovery Strategy Hertfordshire Local Nature Recovery Strategy Greater Essex Local Nature Recovery Strategy Greater London Local Nature Recovery Strategy Berkshire Local Nature Recovery Strategy Hampshire Local Nature Recovery Strategy Surrey Local Nature Recovery Strategy Kent and Medway Local Nature Recovery Strategy	The SEA should consider the LNRS objectives and potential impacts of the options on their achievement, where relevant.

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
The general objectives for each of these include: Reverse biodiversity decline Identify priority areas for nature recovery Integrate nature recovery with climate and water benefits Create resilient ecological networks and improve connectivity Reducing inequalities in access to high-quality natural environments	
Local Wildlife Trust Strategies (various)	
There are a number of local Wildlife Trusts in the Thames Water area, including: • London Wildlife Trust • Herts and Middlesex Wildlife Trust • Berks, Bucks and Oxon Wildlife Trust • Surrey Wildlife Trust • Kent Wildlife Trust	The DP should take into account the key objectives of Wildlife Strategies and protect local wildlife. The SEA assessment framework should consider the effects of options on biodiversity.
Natural England National Character Area (NCA) Profiles	
There are several NCAs within Thames Water's operating boundary. Each of these have individual objective relating to specific landscapes, habitats and species. Generalised objectives for each of these include: Conserve characteristic historic structures Protect the area's rich and diverse archaeology Protect the area's high levels of tranquillity Protect, manage and enhance the good rights of way network Manage and enhance existing habitats Encourage the maintenance of traditional land management practices Protect, and encourage sympathetic management Protect and manage geological features Plan for climate change mitigation and adaptation	The DP may have an effect on NCAs. The SEA should include objectives that take into account the objectives of the NCAs where relevant (e.g. manage and enhance existing habitats).
Oxfordshire Local Enterprise Partnership (OxLEP) Various Strategies, including Environment Strategy	

Objectives identified in the Policy, Plan or Programme	Influences on the Drought Plan (DP) and the SEA objectives
OxLEP was set up with the responsibility of championing and developing the Oxfordshire economy. The partnership has many programmes and strategies including; Local Industrial Strategy, Energy Strategy, Infrastructure Strategy and the Environmental Strategy. The Environment Strategy stresses the importance of protecting its natural capital, including the River Thames and its tributaries, when developing and growing the area.	The DP operation may have the potential to impact the environment. The SEA should include objectives to protect natural capital in line with the OxLEP Environment Strategy. The SEA will also take into account other strategies from OxLEP
Public Rights of Way Improvement Plans (ROWIPs)	
Objectives include those associated with each local authority's rights of way improvement plans.	The DP operation may have the potential to affect the objectives of the ROWIPs. The SEA will include objectives that take into account the objectives of the ROWIPs where relevant.
Enjoying Water - Strategic Priorities for Water Related Recreation in London and South East England	
The strategic priorities outlined in the publication serve as a key tool for identifying and developing recreational opportunities in the region. They emphasise the importance of strategic planning at a regional level to identify both existing resources and new opportunities to cater to the demand for water-related sport and recreation	The DP operation may have the potential to affect the priorities set out in the publication. The SEA will consider potential impact of the DP on water-related sport and recreation.

APPENDIX B: ENVIRONMENTAL BASELINE REVIEW

B.1 BIODIVERSITY, FLORA AND FAUNA

B.1.1 Baseline

Biodiversity comprises 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 Thames Water supply area includes a variety of sites that are designated at a European, national or local level as important for biodiversity, flora and fauna (see **Figure B-1** and **Figure B-2**), including:

- 5 Ramsar[32] Sites (South west London waterbodies, Lee Valley and Thursley & Ockley Bogs, Benfleet and Southend Marshes, and Thames Estuary & Marshes)
- 4 Special Protection Areas (SPA) [33]
- 19 Special Areas of Conservation (SAC) [34]
- 332 Sites of Special Scientific Interest (SSSI) [35]
- 10 National Nature Reserves (NNR) [36]
- 182 Local Nature Reserves (LNR)[37].

Figure B-1 shows the location of these designated sites. **Table B-1** presents details of the internationally designated sites including SPAs and SACs. Additional sites have also been considered outside of the SEA study area boundary where these may be in hydrological connectivity or have functionally linked habitat to the areas impacted by the drought measures. There are no candidate SACs in the Thames catchment.

[32] Ramsar sites are wetlands of international importance designated under the Ramsar Convention.

[33] 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

[34] 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 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended). www.jncc.org.uk

[35] Natural England now has responsibility for identifying and protecting the SSSIs in England under the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000).

[36] NNRs are protected under Sections 16 to 29 of the National Parks and Access to the Countryside Act, 1949 and the Wildlife and Countryside Act, 1981.

[37] LNRs – places with wildlife or geological features that are of special interest locally.

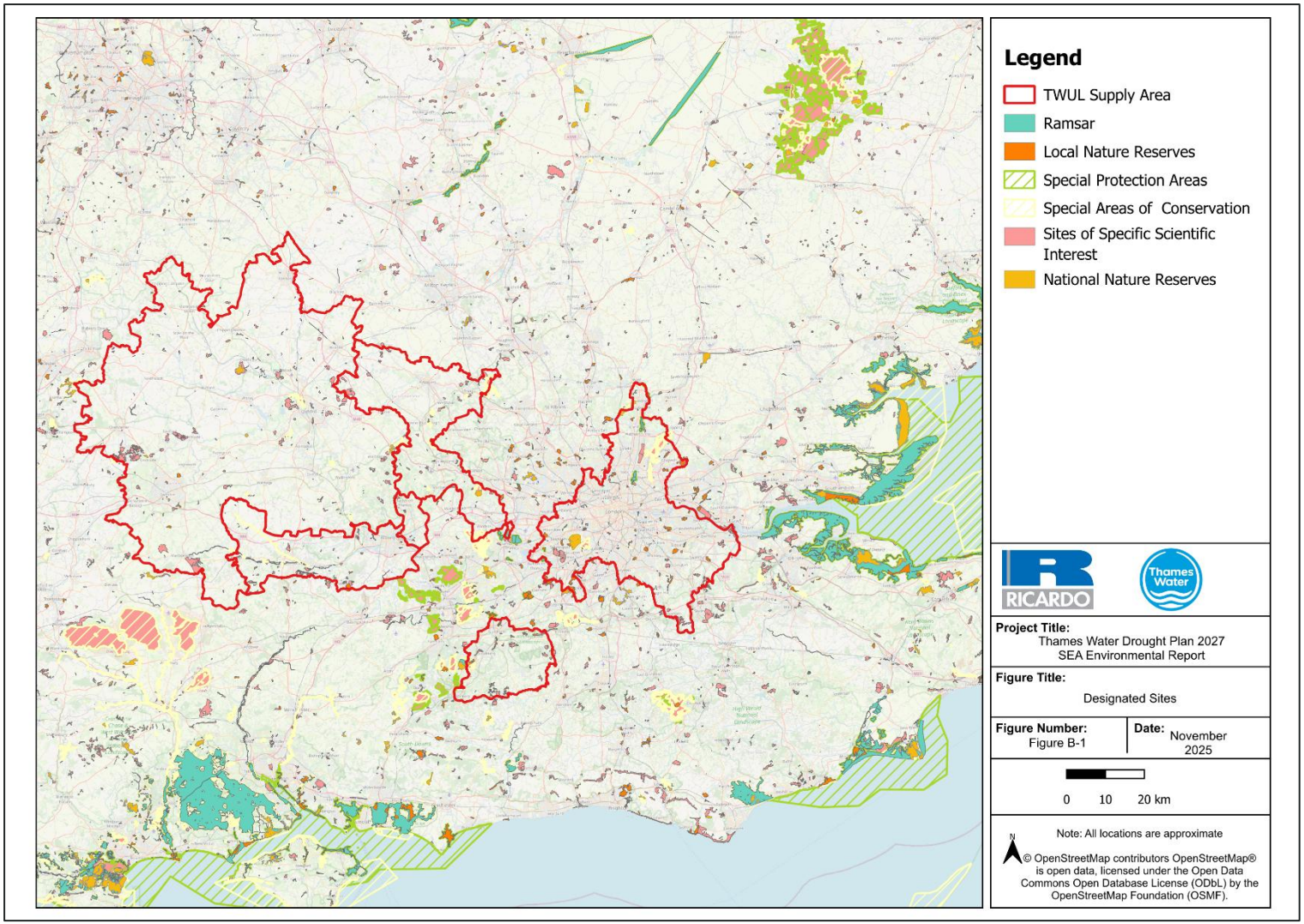

Figure B-1: Designated sites in the SEA study area

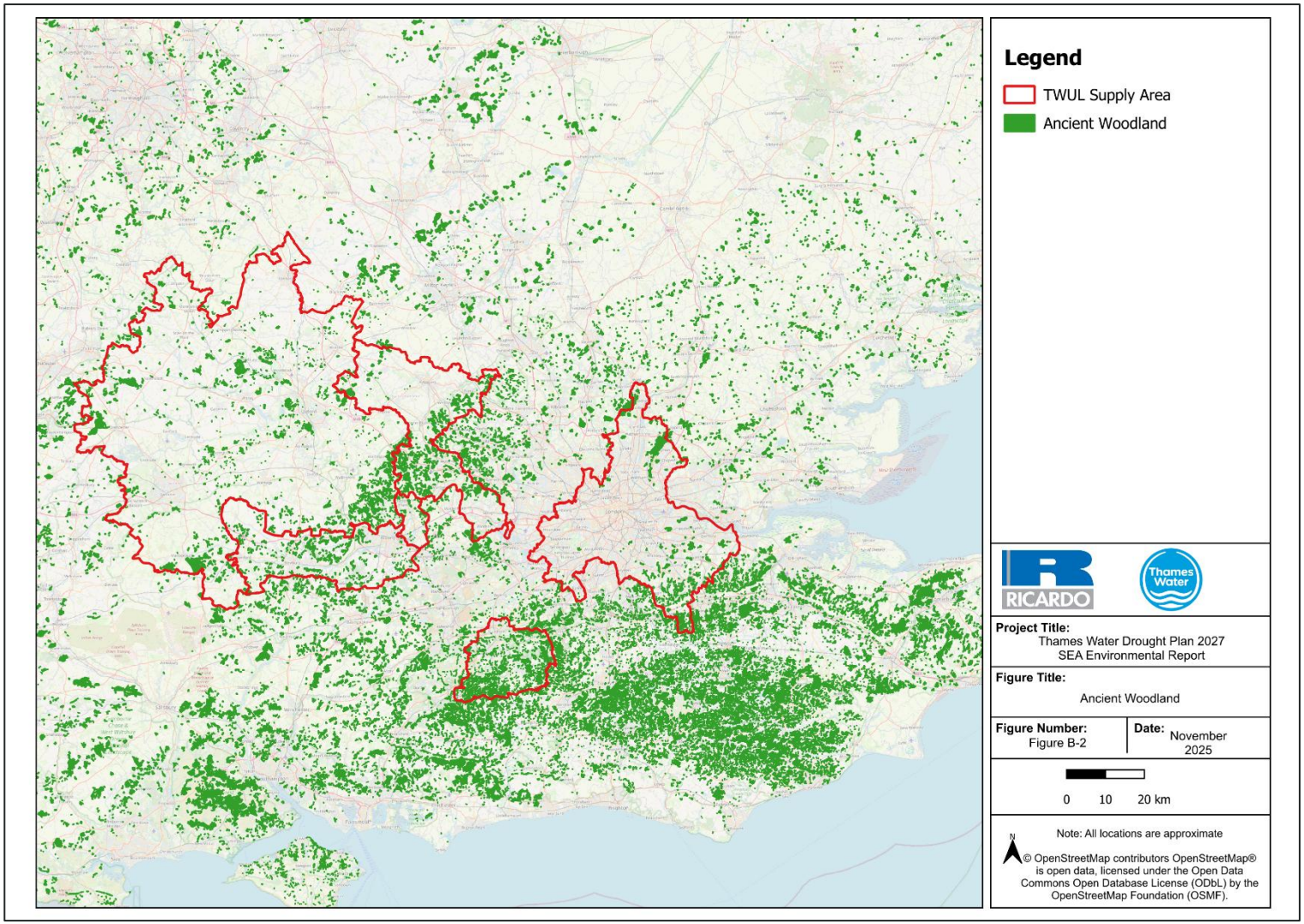

Figure B-2: Ancient woodland sites in the SEA study area

Table B-1: SPAs and SACs in Thames area

Name of Site and Type	Thames Water Water Resource Zone (where applicable)	Region(s)
SPA		
Lee Valley (SPA) (Also Ramsar)	London	East of England
South West London Waterbodies (SPA) (Also Ramsar)	London Slough/Wycombe/Aylesbury	South East and London
Thursley, Hankley & Frensham Commons (SPA), also SAC and SSSI	Guildford	South East and London
Thames Estuary & Marshes (also Ramsar)	London (partially)	
Wealden Heaths Phase II (SPA) (constituting Woolmer Forest, Bramshott and Ludshott Commons, Broxhead and Kingsley Commons and Devil's Punchbowl SSSI)	Guildford	South East and London
Thames Basin Heaths (SPA) (constituting Ash to Brookwood Heaths, Bourley and Long Valley, Bramshill, Broadmoor to Bagshot Woods and Heaths, Castley Bottom to Yately and Hawley Commons, Chobham Common (also NNR), Colony Bog and Bagshot Heaths , Eelmoor Marsh, Hazeley Heath , Horsell Common, Ockham and Wisely Common, Sandhurst to Owlsmoor Bogs and Heaths , Whitmoor Common)	London (partially)	South East and London
Benfleet and Southend Marshes (also Ramsar)		
SAC		
Kennet & Lambourn Floodplain (SAC)	Kennet Valley and SWOX	South East, London and South West
Windsor Forest & Great Park (SAC)	Slough/Wycombe/Aylesbury	South East and London
Hackpen Hill (SAC)	SWOX	South East and London
Oxford Meadows (SAC)	SWOX	South East and London
River Lambourn (SAC) Also SSSI	Kennet Valley	South East and London
Cothill Fen (SAC)	SWOX	South East and London
Chiltern Beechwoods (SAC)	Slough/Wycombe/Aylesbury and SWOX	South East, London and East of England
Hartslock Wood (SAC)	SWOX	South East and London
Little Wittenham (SAC)	SWOX	South East and London
Thursley, Ash Pirbright and Chobham SAC (constituting Thursley Hankley and	Guildford	South East and London

Name of Site and Type	Thames Water Water Resource Zone (where applicable)	Region(s)
Frensham Commons, Colony Bog and Bagshot Heaths, Ash to Brookwood Heaths, Chobham Common SSSIs		
Burnham Beeches (SAC) (also SSSI)	Slough/Wycombe/Aylesbury	South East and London
Kennet Valley Alderwoods (SAC)	Kennet Valley	South East and London
Aston Rowant (SAC) (also SSSI)	SWOX and Slough/Wycombe/Aylesbury	South East and London
Wormley-Hoddesdonpark Woods (SAC)	London	East of England
Wimbledon Common (SAC) (also SSSI)	London	South East and London
Richmond Park (SAC)	London	South East and London
Epping Forest (SAC)	London	South East, London and East of England
North Meadow & Clattinger Farm (SAC) (also SSSI)	SWOX	South West
Pewsey Downs (SAC)	SWOX (outside zone – 1.5km)	South West
Cotswold Beechwoods (SAC)	SWOX	South West
Shortheath Common (SAC)	Guildford (outside zone – 17km)	South East
Mole Gap to Reigate Escarpment (SAC)	London/Guildford (outside zones – 5km)	South East
East Hampshire Hangers (SAC)	Guilford (outside zone – 5km)	South East
Woolmer Forest (SAC)	Guildford (outside zone – 10km)	South East

A list of the SSSIs that have previously been considered in the SEA is provided in **Table B-2** along with the outcome of any previous environmental assessment undertaken, where required. Information in relation to specific drought permit options has been obtained from the most recent respective EARs. Professional judgement, informed by relevant information on the ecological requirements for each habitat/species, identified the sensitivity of the feature to the changes resulting from the drought option. This was used as a basis to screen features in and out of needing further assessment. A description of the perceived sensitivity to each drought option and any uncertainty was identified in each EAR. This information was used to define the confidence of the sensitivity assessment.

Where features were considered to have a **high** or **medium** or **uncertain** sensitivity to drought management actions, the habitats/species were considered for further assessment. Internationally or nationally designated sites were also considered for detailed assessment where a **low** sensitivity was identified. The EARs have been updated for DP 2027 and have informed the SEA of drought permit measures.

Further information on the approach to assessing SSSIs is available in the Environmental Assessment Methodology[38].

[38] Ricardo (2025) Thames Water Drought Plan 2027. Environmental Assessment Methodology. Report for Thames Water Utilities Ltd. March 2025.

Table B-2: SSSIs in Thames Water SEA Study Area

SSSI Name	Drought Permit(s)	Screened In/Out in EARs	Result (taken from EARs)
Kennet Valley WRZ			
Sulham & Tidmarsh SSSI	KEN_0004	In	Negligible
Pamber Forest & Silchester SSSI	KEN_0003	Out	
Ron Ward's Meadow with Tadley Pastures SSSI	KEN_0003	Out	
Decoy Pit, Pools & Woods SSSI	KEN_0003	Out	
West's Meadow, Aldermaston SSSI	KEN_0003	Out	
Ashford Hill Woods & Meadows SSSI	KEN_0003	Out	
Woolhampton Reed Bed SSSI	KEN_0003	Out	
Old Copse, Beenham SSSI	KEN_0003	Out	
Greenham & Crookham Commons SSSI	KEN_0003	Out	
London WRZ			
Sevenoaks Gravel Pits SSSI	LON_0019 (1) LON_0019 (2)	In	Moderate
Otford to Shoreham Downs SSSI	LON_0019 (1), LON_0019 (2)	Out	
Darenth Wood SSSI	LON_0019 (2)	Out	
Farningham Wood SSSI (and LNR)	LON_0019 (1), LON_0019 (2), LON_0006	Out	
Farthing Downs & Happy Valley SSSI	LON_0019 (1)	Out	
West Thurrock Lagoon & Marshes SSSI	LON_0019 (2)		
Quarry Hangers SSSI	LON_0019 (1)	Out	
Titsey Woods SSSI	LON_0019 (1)	Out	
Woldingham & Oxted Downs SSSI	LON_0019 (1)	Out	
Wraysbury and Hythe End Gravel Pits SSSI	Increase in M2 Annual Licence, LON_0011	Out	
Wansunt Pit SSSI	LON_0003, LON_0022	Out	

SSSI Name	Drought Permit(s)	Screened In/Out in EARs	Result (taken from EARs)
Windsor Forest and Great Park SSSI	LON_0011	Out	
Staines Moor SSSI	LON_0011	Out	
Wraysbury Reservoir SSSI	LON_0011	Out	
Langham Pond SSSI	LON_0011	In	Moderate (uncertain)
Thorpe Hay Meadow SSSI	LON_0011	Out	
Dumsey Meadow SSSI	LON_0011	In	Major (uncertain)
Richmond Park SSSI	LON_0011	Out	
Syon Park SSSI	LON_0011	In	Major
Barn Elms Wetland Centre SSSI	LON_0011	In	Major (uncertain)
SWA, Guildford and Henley WRZ			
Blackheath SSSI	GUI_0001	Out	
Colyers Hanger SSSI	GUI_0001	Out	
Wey Valley Meadows SSSI	GUI_0006	Out	
Harpsden Wood SSSI	HEN_0001 HEN_0002	Out	
Lodge Wood & Sandford Mill SSSI	HEN_0001 HEN_0002	Out	
Wykery Copse SSSI	HEN_0001 HEN_0002	Out	
SWOX WRZ			
Chilton Foliat Meadow SSSI	SWOX_0001 (1)	In	Moderate
River Kennet SSSI	SWOX_0001 (1), SWOX_0001 (2), SWOX_0011 (1), SWOX_0012	In	Major (uncertain)/Moderate/Minor (uncertain)
Kennet Valley Alderwoods SSSI	SWOX_0001 (2)	Out	
Cotswold Water Park SSSI	SWOX_0009	Out	
	SWOX_0010	Out	Negligible (uncertain)
	SWOX_0002 (1)	In	Minor (uncertain)
	SWOX_0002 (2)	In	Moderate (uncertain)
	SWOX_0003	In	Negligible
Wildmoorway Meadows SSSI	SWOX_0009	Out	
	SWOX_0002 (1)	In	Negligible

SSSI Name	Drought Permit(s)	Screened In/Out in EARs	Result (taken from EARs)
	SWOX_0002 (2)	In	Moderate (uncertain)
North Meadow & Clattinger Farm SSSI (and SAC & NNR)	SWOX_0009	Out	
	SWOX_0002 (1), SWOX_0002 (2)	In	Moderate(uncertain)
North Meadow, Cricklade SSSI	SWOX_0010	Out	
	SWOX_0002 (1), SWOX_0002 (2)	Out	
Barnsley Warren SSSI	SWOX_0010	Out	
Acre Farm Meadow SSSI	SWOX_0010, SWOX_0002 (1), SWOX_0002 (2), SWOX_0003	Out	
Chimney Meadows SSSI	SWOX_0010, SWOX_0002 (1), SWOX_0002 (2), SWOX_0003	Out	
Clattinger Farm SSSI	SWOX_0010, SWOX_0002 (1), SWOX_0002 (2), SWOX_0003	Out	
Cloatley Manor Farm Meadows SSSI	SWOX_0010, SWOX_0002 (1), SWOX_0002 (2), SWOX_0003	Out	
Distillery Meadows SSSI	SWOX_0010, SWOX_0002 (1), SWOX_0002 (2), SWOX_0003	Out	
Ducklington Mead SSSI	SWOX_0010, SWOX_0002 (1), SWOX_0002 (2), SWOX_0003	Out	
Elmlea Meadows SSSI	SWOX_0010, SWOX_0002 (1), SWOX_0002 (2), SWOX_0003	Out	
Emmet Hill Meadows SSSI	SWOX_0010, SWOX_0002 (1), SWOX_0002 (2), SWOX_0003	Out	
Grafton Lock Meadow SSSI	SWOX_0010, SWOX_0002 (1), SWOX_0002 (2), SWOX_0003	Out	
Haydon Meadow SSSI	SWOX_0010, SWOX_0002 (1), SWOX_0002 (2), SWOX_0003	Out	

SSSI Name	Drought Permit(s)	Screened In/Out in EARs	Result (taken from EARs)
Juniper Hill, Edgeworth	SWOX_0010, SWOX_0002 (1), SWOX_0002 (2), SWOX_0003	Out	
Langley's Lane Meadow	SWOX_0010, SWOX_0002 (1), SWOX_0002 (2), SWOX_0003	Out	
Pike Corner	SWOX_0010, SWOX_0002 (1), SWOX_0002 (2), SWOX_0003	Out	
Restrop Farm & Brockhurst Wood SSSI	SWOX_0010, SWOX_0002 (1), SWOX_0002 (2), SWOX_0003	Out	
Stoke Common Meadows SSSI	SWOX_0010, SWOX_0002 (1), SWOX_0002 (2), SWOX_0003	Out	
Whelford Meadows SSSI	SWOX_0010	In	Negligible
	SWOX_0002 (1)	In	Moderate (uncertain)
	SWOX_0002 (2)	In	Moderate (uncertain)
	SWOX_0003	In	Minor
Winson Meadows SSSI	SWOX_0010	Out	
	SWOX_0002 (1)	In	Moderate (uncertain)
	SWOX_0002 (2)	In	Moderate (uncertain
	SWOX_0003	In	Minor (uncertain)
Alvescot Meadows SSSI	SWOX_0002 (1), SWOX_0002 (2)	Out	
Upper Waterhey Meadow SSSI	SWOX_0002 (1), SWOX_0002 (2), SWOX_0003	Out	
Cassington Meadows SSSI	SWOX_0006	In	Major
Pixey & Yarnton Meads SSSI	SWOX_0006	In	Major
Wolvercote Meadows SSSI	SWOX_0006	In	Major
Port Meadow with Wolvercote Common & Green SSSI	SWOX_0006	In	Major
Wytham Wood SSSI	SWOX_0006	Out	
Wytham Ditches and Flushes SSSI	SWOX_0006	In	Major

SSSI Name	Drought Permit(s)	Screened In/Out in EARs	Result (taken from EARs)
Iffley Meadows SSSI	SWOX_0006	In	Major
Littlemore Railway Cutting SSSI	SWOX_0006	Out	
Culham Break SSSI	SWOX_0006	In	Minor
Hartslock Wood SSSI	SWOX_0006, SWOX_0007	Out	
Little Wittenham SSSI	SWOX_0006	Out	
Holies Down SSSI	SWOX_0006, SWOX_0007	Out	
Lardon Chase SSSI	SWOX_0007	Out	
Hackpen, Warren and Gramp's Hill Downs SSSI	SWOX_0005	Out	

Marine Conservation Zones (MCZs) are designated to protect a range of nationally important marine wildlife, habitats, and geology and geomorphology. There are no drought sources in the SEA study area that have an impact on a MCZ. Swanscombe MCZ was designated in 2019, with its interest features being the tentacled lagoon worm *Alkmaria romijni*, however, this site falls outside of the zone of influence for the LON_0011 drought permit option. The Upper Thames Estuary is a recommended MCZ and is within the zone of influence of the LON_0011 drought permit however this has not been designated.

Species and habitats of principal importance for the conservation of biodiversity in England are identified in the Natural Environment and Rural Communities (NERC) Act 2006 Section 41. There are 18 habitats[39] designated within the Natural Environmental and Rural Communities (NERC) Act within the Thames Corridor. These include rivers and streams (e.g. sensitive chalk rivers), reedbeds, fens and water meadows. Important water-related NERC species are listed in below.

- Otter
- Water vole
- Atlantic salmon
- European eel
- Sea/Brown trout
- River lamprey
- White clawed crayfish and
- Snakeshead Fritillary
- Loddon Lilly
- Creeping Marshwort
- Narrow-leaved water-dropwort
- River water-dropwort
- Fine-lined Pea Mussel
- Freshwater Pea Mussel
- Depressed River Mussel
- Greater Water Parsnip
- Club-tailed Dragonfly
- Tassel Stonewort
- Desmoulins Whorl Snail
- Snipe
- Lapwing
- Natterer's Bat
- Daubenton's Bat
- Pipistrelle Bat

Local Wildlife Sites (LWS) are areas of land that are especially important for their wildlife and are identified and selected locally using robust, scientifically determined criteria and detailed ecological surveys. LWS data are generally held by local environment record centres. There are a large number

[39] Species or habitats of principal importance for the conservation of biodiversity in England, identified in the Natural Environmental and Rural Communities (NERC) Act 2006 Section 41.

of LWS in the SEA study area, many of which may be associated with water features. Over 900+ sites have been identified to date which are located in the vicinity of Thames Water's drought options as part of the screening exercise which was undertaken to inform the DP 2022 detailed Environmental Assessment Reports (EARs). This information will be used to inform the updates to the DP 2027 EARs (see **Section 1.5**).

Natural England has defined a series of 159 National Character Areas (NCAs) as a means to conserve nature in England[40]. These are areas of countryside identified by the unique combination of physical attributes, wildlife, land use and culture. National Character Areas (NCAs) that cover the River Thames basin are described in **Table B-23** (under the Landscape and Visual Amenity topic).

Ancient woodlands in England and Wales are important habitats that should be protected. An ancient woodland is any wooded area that has contained woodland continuously since at least 1600 AD. They tend to be more ecologically diverse and of a higher nature conservation value than those developed recently, or where cover on the site has been intermittent. They often also have cultural importance. Areas of ancient woodland are shown in **Figure B-1**.

The WFD ecological status classification considers the condition of biological quality elements (e.g. aquatic invertebrates, plants and fish), the morphology of the habitat available in each water body (e.g. a defined stretch of river), and concentrations of supporting physico-chemical elements (e.g. oxygen or ammonia and concentrations of specific pollutants). See the 'Water' topic for details on water quality, and **Table B-12** for the ecological condition of surface water bodies.

Water abstraction and associated infrastructure can sometimes result in adverse effects on water-related sites. Impacts on biodiversity may include the drying out of wetland habitats, lower water levels and slower flows in watercourse, deterioration in water quality, change in water temperature, or the transfer or proliferation of invasive species. There is also potential for further secondary impacts such as habitat or community fragmentation, and impacts on food availability, reproduction, predation risk, competition and survival of species. The WFD Thames River Basin District River Basin Management Plan (RBMP) identifies barriers to fish passage as one of the major issues affecting the ecology of rivers in the Thames River Basin District, some of which are related to abstraction impacts on migratory flow conditions and/or abstraction infrastructure (e.g. intakes or weirs).

Drought options have the potential to affect biodiversity, flora and fauna due to the operational abstraction of water during times of water stress or due to impacts of any construction works required. The sensitivity of environmental features that can be affected by implementing drought options is site specific. A drought is transient and the deployment of a drought option would only be for a limited period of time. Therefore, the duration of effects on sensitive features and reversibility post drought are important considerations.

Invasive Non-Native Species (INNS)

There has been a dramatic increase in the number of non-native species arriving into the UK over recent decades, as well as in the number of invasive species being established. There are approximately 2000 non-native species established in Britain, with the majority of them in the terrestrial environment and smaller numbers in marine and freshwater environments. The River Thames is particularly vulnerable to introductions of INNS due to the dense human population and high level of marine traffic and is now thought to be one of the most heavily invaded river systems in the world[41,42]. Implementation of Thames Water's DP options are not expected to increase in the distribution of INNS. Non-native species cause significant adverse impacts, including out-competing native species and

[40] Natural England - Natural Character Area Profiles. Available at https://nationalcharacterareas.co.uk [Accessed March 2025]

[41] Jackson, M.C. and Grey, J., 2013. Accelerating rates of freshwater invasions in the catchment of the River Thames. *Biological Invasions*, 15, pp.945-951.

[42] Richardson, M. and Soloviev, M., 2021. The Thames: arresting ecosystem decline and building Back better. *Sustainability*, *13*(11), p.6045.

spreading disease. The UK Government 2023 strategy on invasive non-native species[43] builds on previous strategies to provide a framework for coordinated action to prevent spread and work to eradicate species across the UK. The distribution of INNS has been assessed in the SEA report and the spread of invasive species forms a key question with regards to biodiversity in **Section 4.2**.

B.1.2 Future Baseline

It is not expected that many additional sites will be designated under international or national legislation, with the focus therefore on achieving the conservation objectives set for each of these sites. A range of measures are included in the management plans for each site to contribute to these objectives and, assuming sufficient resources are in place, it is likely that the condition of these sites will improve over the next two or three decades to reach the objectives. These timescales recognise the time required for environmental changes to arise following positive interventions. A similar trend is likely for achievement of objectives associated with the NERC priority habitats.

The number of locally designated sites may increase slightly in response to growing community activities and the development of local environmental initiatives. An improving trend in condition of these sites is also anticipated with greater resources (particularly voluntary resources) devoted to their protection and enhancement. Thames Water is working with WRSE to determine the level of Environmental Ambition measures required in the future. This applies particularly to chalk streams and Thames Water is seeking to cease all abstraction that adversely affects vulnerable chalk streams.

To address the decline in nature, the government has made legally binding commitments to halt biodiversity loss and drive recovery through targeted, coordinated, and collaborative action. As part of this, Local Nature Recovery Strategies (LNRS) have been published, with others still in development. These strategies establish priorities for nature recovery and propose actions in locations where they can make the greatest contribution to achieving those priorities. Within the Thames Water supply area, 16 authorities, appointed by the Secretary of State for Environment, Food and Rural Affairs, are leading the preparation of LNRS for their respective areas. The proposals set out in these strategies are intended to guide the public, private, and voluntary sectors in focusing their recovery efforts for maximum collective impact. Responsible authorities will be required to periodically review progress and update their strategies to reflect completed actions and identify areas where further work is needed. Although bespoke funding for LNRS remains uncertain, they represent a clear local ambition for nature recovery, shaped by extensive stakeholder engagement, and include measures highly relevant to the water environment[44].

The Defra 25 Year Environment Plan[45] includes a commitment to restore 75% terrestrial and freshwater protected sites to favourable condition and to create or restore 500,000 hectares of wildlife-rich habitat outside the protected site network, focusing on priority habitats as part of a wider set of land management changes providing extensive benefits. The 25 Year Plan also proposed an adoption of 'Biodiversity Net Gain' approach to development, an approach introduced into national planning policy in 2019 and which will be mandated by the Environment Bill[46]. The 25 year Plan also includes a commitment to support land management at landscape and catchment level and to support the adoption of long-term sustainable land management practices to significantly expand wildlife habitat and provide opportunities for species and ecosystem recovery.

Current trends in data have shown that there has been very little change in the area of SSSIs in favourable condition since 2016. In 2022, the UK formally made a commitment to protect and conserve

[43] Defra (2023) The Great Britain Invasive Non-Native Species Strategy 2023 – 2030 Available at https://www.nonnativespecies.org/assets/Uploads/The-Great-Britain-Invasive-Non-Native-Species-Strategy-2023-to-2030-v2.pdf [Accessed March 2025]

[44] Department for Environment, Food and Rural Affairs (2023) Local nature recovery strategies Available at https://www.gov.uk/government/publications/local-nature-recovery-strategies/local-nature-recovery-strategies [Accessed December 2025]

[45] HM Government (2018) A Green Future: Our 25 Year Plan to Improve the Environment. Available at https://www.gov.uk/government/publications/25-year-environment-plan [Accessed March 2025].

[46] Department for Environment, Food and Rural Affairs Environment Bill 2020 Available at https://www.gov.uk/government/publications/environment-bill-2020 [Accessed March 2025]

a minimum of 30% of land and sea for biodiversity by 2030, known as 30x30[47]. The 2023 Environmental Improvement Plan[48] contains a commitment from the UK Government to restore 75% of protected sites to favourable condition by 2042 as well as interim targets for all SSSIs to have an up-to-date condition assessment and 50% of these to have actions on track to achieve favourable condition by 31 January 2028. There are a number of legislative instruments, including notably the Habitats Regulations and the UK's Restoring Sustainable Abstraction programme, which will contribute towards future improvements to the quality of habitats in the region.

Habitat fragmentation is a major problem for wildlife in the UK and across the world, the effects of which include loss of habitat area, reduction in habitat quality and increased extinction risk. This can be particularly important for functionally linked land which is considered to be critical to, or necessary for the ecological or behavioural functions of a qualifying feature for which a SAC, SPA or Ramsar has been designated. There are a number of actions that can be taken in response to habitat fragmentation including protecting existing areas, restoration of affected areas and creation of new areas. For example. the Environmental Improvement Plan includes commitments to restore and establish new woodlands along England's rivers.

Climate change is likely to have an impact on wildlife in the future by exacerbating existing pressures such as changes to the timing of seasonal activity, and water scarcity. It is acknowledged that there is a need to allow wildlife to adapt to the impacts of climate change. Climate may limit species' distributions indirectly through the impact of invasive species on native species along climatic gradients[49]. It will affect the abundance and diversity of natural enemies, competitors and species that constitute resources, as well as a species' ability to compete for resources or resist natural enemies.

B.1.3 Key Issues

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

- The need to protect, conserve and enhance biodiversity, ecological functions and biodiversity connectivity within Thames Water's supply and source areas, 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 to create functioning habitat corridors.
- The need to control the spread of Invasive Non-Native Species (INNS)
- The need to recognise the importance of allowing wildlife to adapt to climate change.
- The need to engage more people in biodiversity issues so that they personally value biodiversity and know what they can do to help, including through recognising the value[50] of the ecosystem services

[47] Natural England (2023) 30 by 30: a boost for nature recovery Available at: https://naturalengland.blog.gov.uk/2023/12/11/30-by-30-a-boost-for-nature-recovery/ [Accessed March 2025]

[48] HM Government (2023) Environmental Improvement Plan 2023. First revision of the 25 Year Environment Plan. Available at: https://assets.publishing.service.gov.uk/media/64a6d9c1c531eb000c64fffa/environmental-improvement-plan-2023.pdf [Accessed March 2025]

[49] Pateman & Hodgson (2015) Biodiversity Climate change impacts report card technical paper. Available at: http://www.nerc.ac.uk/research/partnerships/lwec/products/report-cards/biodiversity/papers/source06/ [Accessed March 2025]

[50] In this context, "value" refers to the role of biodiversity in supporting ecosystem services and fostering public engagement in conservation. It does not imply a relative ranking (e.g. low, medium, high) of specific features or habitats.

B.2 POPULATION AND HUMAN HEALTH

B.2.1 Baseline

Population

The greater South East region is a densely populated part of the UK. London, as expected, is the most densely populated area with the most recent estimates at 8.9 million people[51] and 5,701 people per square kilometre, compared to an average of 438 per square kilometre in England as a whole[52]. Households in England are projected to increase by 10.5% between 2022 and 2032, from 23.5 million to 25.9 million [53].

Table B-3 describes the latest population statistics for the NUTS regions[54] covered by the River Thames basin. London was previously the fastest growing population in the 2016-based projections but has now dropped to fifth place out of all regions in England. However, it is expected to be the largest-growing region in absolute terms (increase of 434,000 people by mid-2028). The South West region is projected to be the fastest-growing region in percentage terms, out of those regions covered by the River Thames basin.

Table B-3: Population[55] statistics and projections (millions)

Region	Population 2022 (mid)	Population 2032 (mid)	% change
South East	9.4	10.0	4.4
London	8.9	9.5	4.9
East of England	6.4	6.8	5.0
South West	5.8	6.2	6.8
England	57.1	60.8	6.8

Considering the respective purposes of the WRMP and the DP, it is considered that the long term issues relating to population growth represent key issues for the strategic nature of the WRMP rather than the reactive operation of the DP. The awareness of the population in the region to drought conditions and the avoidance of emergency drought measures are considered key issues with respect to the DP and population.

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 to provide additional supply of water will help safeguard public health) or adverse impacts (e.g. noise and disruption from temporary infrastructure required to pump water). The

[51] London Datastore (2024) London's Population Greater London Authority (GLA) Available at https://data.london.gov.uk/dataset/londons-population [Accessed March 2025]

[52] ONS (2024) Population estimates for the UK, England, Wales, Scotland, and Northern Ireland: mid-2022 Available at https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/mid2022 [Accessed March 2025].

[53] ONS (2025) Household projections for England: 2022-based Available at https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/bulletins/householdprojectionsforengland/2022based [Accessed October 2025].

[54] Nomenclature of Territorial Units for Statistics (NUTS) areas

[55] ONS (2025) Subnational population projections for England: 2022-based. https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/bulletins/subnationalpopulationprojectionsforengland/2022based [Accessed March 2025].

DP also sets out measures to ensure that essential water supplies can be maintained to all Thames Water's customers, thereby protecting public health in drought conditions.

The UK is committed to delivering against the 17 Sustainable Development Goals (SDGs) as part of the United Nations 2030 Agenda for Sustainable Development. These include sustainability indicators related to health and deprivation and the UK published a Voluntary National Review in 2019[56], reporting on the UK's progress to date on delivering the SDGs. In general, the health of the population is good in the regions the Thames Water supply area covers.

Life expectancy at birth for both males and females in the region is better than the England average at around 81 years old and 84 years old respectively. Against the various indicators included within the Public Health Profiles, the region is generally better than the national average[57]. Among the English regions, the South East had the highest proportion of people reporting very good health, at 49.6%, closely followed by London at 49.0% (see **Table B-4**). London experienced the most significant improvement in self-reported very good health, rising from 44.5% in 2011 to 49.0% in 2021. In contrast, the South West recorded the smallest increase over the same period, with a change of just 1.9 percentage points[58].

Table B-4: The age-standardised percentage of general health outcomes, English Regions and Wales, 2021

Region	Very Good	Good	Fair	Bad	Very Bad
London	49.0	32.9	12.6	4.1	1.3
South East	49.6	34.4	11.8	3.3	0.9
South West	48.7	34.1	12.5	3.7	1.1
East of England	47.9	35.0	12.5	3.6	1.0

Research indicates that, in certain instances, individuals living in disadvantaged areas face higher exposure to health hazards such as air pollution, coastal flooding, and proximity to large industrial facilities and waste management sites[59]. The Office of National Statistics (ONS) compiled the 'Indices of Multiple Deprivation' in 2025[60], which score and rank local authorities and smaller 'Super Output Areas' according to their performance against seven distinct categories of deprivation. Many of the least deprived areas in the country lie within the Thames Water supply area. However, the London WRZ includes many areas facing high levels of deprivation. There are also smaller pockets of deprivation beyond London which should not be overlooked, for example in Swindon and Reading. The SEA will consider whether any of the DP options will influence deprivation, either positively or negatively.

Recreation and Tourism

Drought options have the potential to affect areas with recreation value. Impacts may arise from operational phases resulting in effects on water levels beyond those that may result from the 'natural' drought alone. Any potential construction requirements or any drought options impacts may include

[56] HM Government (2019) Voluntary National Review of progress towards the Sustainable Development Goals. United Kingdom of Great Britain and Northern Ireland, June 2019 https://www.gov.uk/government/publications/uks-voluntary-national-review-of-the-sustainable-development-goals [Accessed March 2025]

[57] Office for Health Improvement and Disparities (n.d) Public health profiles Available at https://fingertips.phe.org.uk/profiles [Accessed March 2025]

[58] ONS (2023) General health by age, sex and deprivation, England and Wales: Census 2021 Available at https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandwellbeing/articles/generalhealthbyagesexanddeprivationenglandandwales/census2021 [Accessed March 2025]

[59] Department for Environment, Food and Rural Affairs (2006) Air Quality and Social Deprivation in the UK: an environmental inequalities analysis Available at https://uk-air.defra.gov.uk/library/reports?report_id=424 [Accessed March 2025]

[60] MHCLG (2019) The English Indices of Deprivation 2025 Available at https://www.gov.uk/government/statistics/announcements/english-indices-of-deprivation-2025 [Accessed October 2025]

indirect reductions in amenity through reduced access or loss of areas of amenity value. Temporary water use restrictions (voluntary and statutory) may also adversely affect some recreational activities.

Figure B-3 shows some of the areas that may be used for recreation within the Thames River Basin. This includes National Trails, National Landscapes (see Landscape and Visual Amenity topic), National Nature Reserves (NNRs) and Local Nature Reserves (LNRs) (see Biodiversity, Flora and Fauna topic). Many of the recreational and cultural offerings are represented in other topic areas in the baseline. For example, there are a number of water-related resources of recreation importance including canals (e.g. the Kennet & Avon and Oxford canals), reservoirs for sailing or fishing and river sections of particular importance with respect to navigation (e.g. the River Thames and the River Wey) and angling (e.g. River Kennet), and the Thames Path and Blue Ribbon Network in London.

Angling is a popular pastime in the South East region with the Environment Agency investing £224,787 into more than 60 local angling projects in the South East in the 2023-2024 financial year[61]. Coarse fishing is widely practiced along the main river, with species such as barbel, roach, perch, and carp commonly targeted. In addition, several tributaries, particularly the chalk streams and rivers flowing through the Cotswolds, support fly-fishing for trout. These diverse habitats make the Thames catchment a valuable resource for recreational anglers, with fishing access managed through Environment Agency permits and local angling clubs [62,63]. In the South East, which includes the Thames River Basin, there was an 8% decrease in salmon rod catches between 2022 and 2023. For the same period, there was an increase of 26.8% for sea trout rod catches. There was no change in net or fixed engine catches for either salmon or sea trout when compared to 2022. Additionally, an analysis of rivers in the South East revealed that 100% of sea trout rod catches were released. No salmon or sea trout were caught in nets in 2023[64].

Public areas of open space, National Parks (see Landscape and Visual Amenity topic), country parks[65], Rights of Way, walking routes and cycle routes are also important with respect to recreation and tourism. Some, for example the Thames Path, form features of particular importance. The National Planning Policy Framework (NPPF)[66] states planning policies should protect and enhance public rights of way and access. All Local Authorities are required to prepare and publish Rights of Way Improvement Plans (ROWIPs). These plans explain how improvements made by local authorities to the public rights of way network will provide a better experience for a range of users, including pedestrians, cyclists, horse riders, horse and carriage drivers, people with mobility problems, and people using motorised vehicles (e.g. motorbikes).

The NPPF defines green infrastructure as ‘a network of multi-functional green and blue spaces and other natural features, urban and rural, which is capable of delivering a wide range of environmental, economic, health and wellbeing benefits for nature, climate, local and wider communities and prosperity’. Local planning authorities are required to plan positively for strategic networks of green infrastructure and take account of the benefits of green infrastructure in reducing the risks posed by climate change. The majority of LAs have therefore developed Green Infrastructure Strategies or Studies addressing these issues. Green infrastructure will often play a large part in local recreational resources.

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[61] Environment Agency (2024) The Environment Agency invests £225,000 into local angling Available at https://www.gov.uk/government/news/the-environment-agency-invests-225000-into-local-angling?utm_source=chatgpt.com [Accessed March 2025]

[62] Visit River Thames (2025) Fishing On The River Thames Available at https://www.visitthames.co.uk/things-to-do/activities/fishing/ [Accessed October 2025]

[63] Cotswold Flyfishers (n.d) Introduction to our fishing Available at https://cotswoldflyfishers.com/Our-Waters.php [Accessed October 2025]

[64] Environment Agency and Natural Resources Wales (2024) Salmonid and freshwater fisheries statistics for 2023 Available at https://www.gov.uk/government/publications/salmonid-and-freshwater-fisheries-statistics-2023/salmonid-and-freshwater-fisheries-statistics-for-2023#:~:text=There%20were%20no%20salmon%20net%20catches%20in,South%20East%20(Southern)%20net%20fishery%20in%202023. [Accessed October 2025]

[65] Area designated for people to visit and enjoy recreation in a countryside environment

[66] Ministry of Housing, Communities and Local Government (2024) National Planning Policy Framework Available at https://www.gov.uk/government/publications/national-planning-policy-framework--2 [Accessed March 2025]

The Archaeology and Cultural Heritage topic identifies the importance of the Thames River Basin with respect to heritage assets, including 6 internationally recognised World Heritage Sites and 1210 Scheduled Monuments within the Thames Water Supply Area.

Tourism is a key driver of the UK economy, attracting both domestic and international visitors. In 2023, the sector supported an estimated 3.9 million jobs, including 1.2 million directly tied to tourism, representing 3.9% of the national workforce. That year, it generated £58 billion in direct economic output, accounting for 2.4% of the UK's total. Inbound travel reached record levels in 2024, with 42.5 million international visitors, up from 38.0 million in 2023. Domestic tourism remained robust, with UK residents making 105.6 million overnight trips across Great Britain, totalling 308 million nights and £32.9 billion in spending. London was the most visited destination, receiving 20 million overnight stays, nearly half of all inbound visits, and generating £5.4 billion in expenditure, or 20% of the national total[67]. Its capacity to host major international events, such as sporting and cultural showcases, can significantly increase demand on local infrastructure, including water supply. While this surge is partly offset by residents travelling away from home, the net effect is a temporary rise in population reliant on local resources.

Many tourist attractions are closely linked to the water environment. For instance, several waterways were restored as part of the Olympic legacy and now serve as valuable recreational assets. In 2023, London recorded the highest proportion of holiday visits within the Thames Water Supply Area (53%), followed by the South West (39%), South East (28%), and East of England (23%)[68]. Given tourism's substantial impact on water demand, particularly during peak seasons and drought conditions, it is essential to maintain a resilient and sustainable supply to support both residents and visitors.

[67] Murray, A (2025) Tourism: statistics and policy - House of Commons Library Available at https://commonslibrary.parliament.uk/research-briefings/sn06022/ [Accessed October 2025]

[68] ONS (2024) Travel trends: 2023 Available at https://www.ons.gov.uk/peoplepopulationandcommunity/leisureandtourism/articles/traveltrends/2023 [Accessed March 2025]

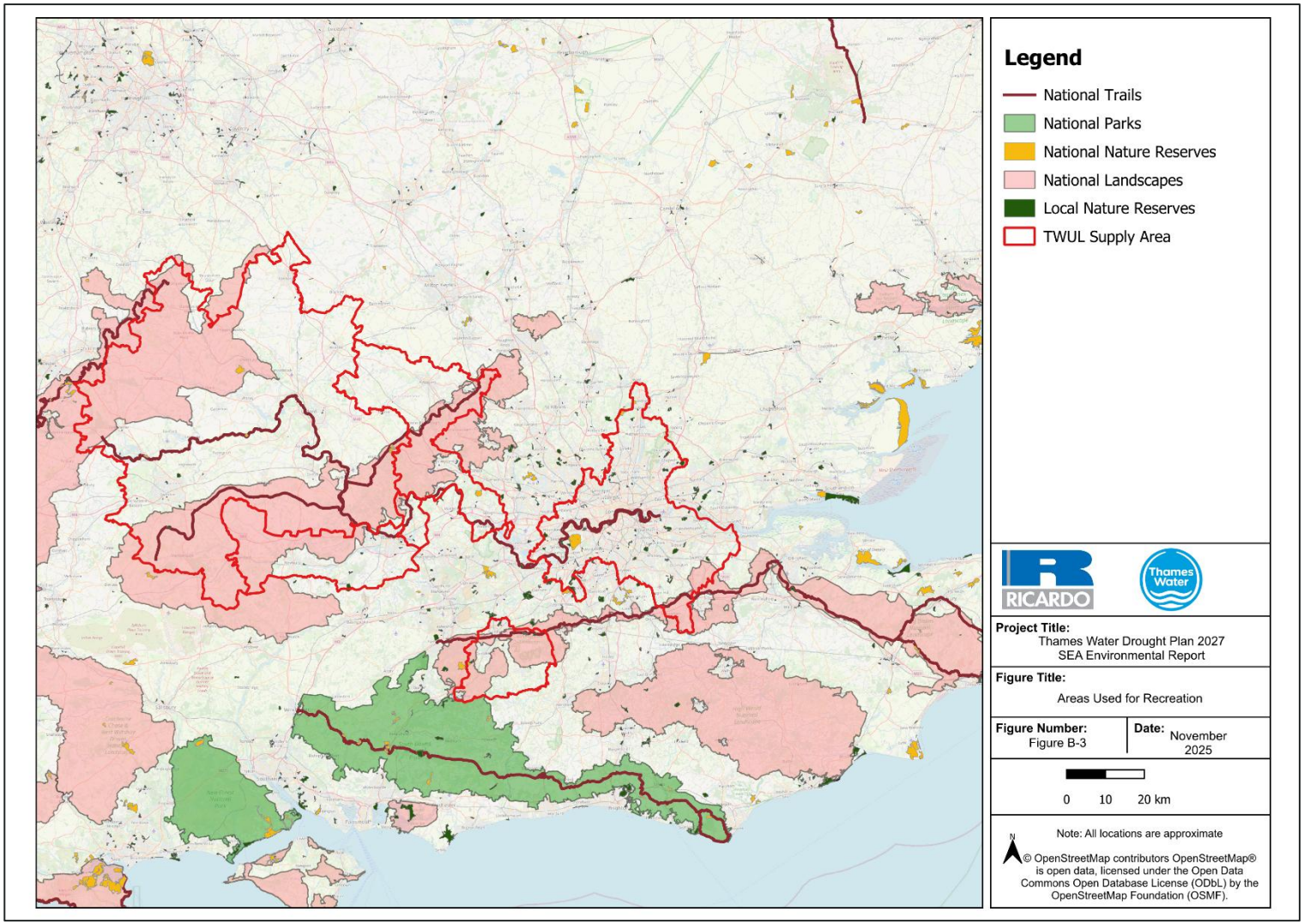

Figure B-3: Areas used for recreation within SEA study area

Economy and Employment

The Greater South East region is a prosperous region of the UK and has relatively low rates of unemployment (see **Table B-5**). The employment rate for individuals aged 16 to 64 varies across regions in England. In the South West, the employment rate is the highest at 78.8% , followed closely by the East at 78.0% and the South East at 77.8%. London has a slightly lower employment rate at 74.3%, while the overall employment rate for England stands at 75.4%. Regarding unemployment, rates for individuals aged 16 and over vary across regions in England. London has the highest unemployment rate at 6.1%, significantly above the national average of 4.5%. The East of England reported a slightly lower rate at 4.3%, while the South West and South East have the lowest unemployment rates at 4.0%and 3.9%, respectively[69].

Table B-5: Employment Statistics - 2023[70]

Region	Employment rate (%) aged 16 to 64 years	Change on July to September 2024	Unemployment rate (%) aged 16 years and over	Change on July to September 2024	Inactivity rate (%) aged 16 to 64 years	Change on July to September 2024
East	78.0	1.0	4.3	0.9	18.5	-1.6
London	74.3	-1.5	6.1	0.2	20.8	1.4
South East	77.8	0.3	3.9	-0.1	19.0	-0.2
South West	78.8	0.0	4.0	0.4	17.9	-0.2
England	75.4	0.0	4.5	0.1	21.0	0.0

The South East region is one of the most densely populated and urbanised parts of the UK, where business services make up a significant proportion of the economy; however, agriculture is also one of the more important industries outside of Greater London. Some businesses that rely on water supply have the potential to be affected by the DP through a Temporary Use Ban or a Drought Order to ban prescribed non-essential water uses. However, the DP also sets out measures to maintain essential water supplies to businesses during drought conditions to ensure most businesses can continue to operate without any disruption.

B.2.2 Future Baseline

Population is projected to grow by 21.5%in the Thames River Basin area (2016/17 to 2044/45) with the greatest growth forecast for the SWOX and Guildford WRZs. The demand for new housing in England is estimated to be as high as 340,000 new homes needed per year, of which 145,000 should be affordable [71].

[69] ONS (2025) Labour market in the regions of the UK: February 2025 Available at https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/regionallabourmarket/february2025 [Accessed March 2025]

[70] ONS (2025) Labour market in the regions of the UK: February 2025 Available at https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/regionallabourmarket/february2025 [Accessed March 2025]

[71] Barton, C, Wilson, W, Rankl, F and Panjwani, A (2023) Tackling the under-supply of housing in England - House of Commons Library Available at https://commonslibrary.parliament.uk/research-briefings/cbp-7671/#:~:text=According%20to%20one%20estimate%20commissioned,which%20145%2C000%20should%20be%20affordable. [Accessed October 2025]

Future planning increasingly recognises the value of recreational amenities, natural green spaces, and heritage assets in shaping sustainable communities[72]. 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[73] Partnership with civil society to support the development of green infrastructure in England. Improvements to the quality of the water environment and certain potential climate change and land use impacts will enhance the appeal of natural areas, attracting visitors [74,75]. The NPPF suggests a range of areas that should be taken into account, including the provision of appropriate facilities for recreation that preserve the openness of the green belt[76]. Improvements to the quality of the water environment and certain potential climate change impacts will present opportunities for an expanding tourist industry in the region.

B.2.3 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 public awareness of drought conditions and importance of maintaining resilient, reliable public water supplies without the need for emergency drought measures.
- The need to ensure water quantity and quality in rivers is maintained for a range of uses including tourism, recreation, navigation and other use such as agriculture.
- 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, protecting and enhancing recreation resources, green infrastructure and the natural and historic environment.
- The need to accommodate an increasing population.
- Sites of nature conservation importance, heritage assets, water resources, important landscapes and public rights of way contribute to recreation and tourism opportunities and subsequently health and wellbeing and the economy.

B.3 MATERIAL ASSETS AND RESOURCE USE

B.3.1 Baseline

Water Use

Thames Water supply around 2,600 million litres of water per day (Ml/d) into its supply system to around 10 million people and 220,000 businesses[77]. In 2024/25 annual average leakage of 569 Ml/d was

[72] Ministry of Housing, Communities and Local Government and Department for Levelling Up, Housing and Communities (updated 2025) Natural environment Available at https://www.gov.uk/guidance/natural-environment [Accessed October 2025]

[73] 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.

[74] Environment Agency (2025) 2. Current and future pressures on water resources, an overview: National Framework for Water Resources 2025 Available at https://www.gov.uk/government/publications/national-framework-for-water-resources-2025-water-for-growth-nature-and-a-resilient-future/2-current-and-future-pressures-on-water-resources-an-overview-national-framework-for-water-resources-2025 [Accessed October 2025]

[75] Department of Energy Security and Net Zero and Department for Environment, Food and Rural Affairs (2025) Unlocking benefits for people, nature and climate: Actions to jointly address climate change and biodiversity loss in England Available at https://tinyurl.com/yc2k8hzc [Accessed October 2025]

[76] Ministry of Housing, Communities and Local Government (2024) National Planning Policy Framework Available at https://www.gov.uk/government/publications/national-planning-policy-framework--2 [Accessed March 2025

[77] Thames Water (2023) Water Resources Management Plan 2024 Available at https://www.thameswater.co.uk/about-us/regulation/water-resources [Accessed March 2025]

reported, achieving a 3-year-average leakage reduction of 13.2%. Average water consumption per capita in the Thames Water supply area is 139 litres/day (2024/25),[78]. Thames Water has ongoing programmes to reduce leakage from its network and to encourage more efficient use of water by customers.

Table B-6 shows the average per capita consumption (PCC) by WRZ and reflects "dry year" demand. PCC ranges between 130.5 and 140.3 (l/p/d) (litres per person, per day) with London WRZ exhibiting the greatest PCC in the Thames Water supply area. The national average water consumption in England is 137 (l/p/d) (2023/24)[79]. Thames Water continues to implement initiatives aimed at reducing leakage within its network and promoting water efficiency among its customers. The company also has bulk supply agreements to transfer both raw and treated water to neighbouring suppliers, including Essex and Suffolk Water and Affinity Water. The largest of these agreements involves the transfer of raw water from Thames Water's Lee Valley reservoirs to Northumbrian Water's Essex and Suffolk region, averaging up to 91 Ml/d and reaching a maximum of 118.2 Ml/d.[80].

Table B-6: Per Capita Consumption (Average) by WRZ AR25

WRZ	Average PCC (l/person/d)
London	140.3
SWOX	134.5
SWA	138.2
Kennet Valley	130.5
Guildford	132.9
Henley	137.9

Resource Use and Waste

There is an ongoing need for society to reduce the amount of waste it generates, by using materials more efficiently, and improving the management of waste that is produced. In England, biodegradable municipal waste[81] (BMW) to landfill figures have almost halved over the period 2010 to 2022 (10.3 million tonnes to 5.1 million tonnes). In 2022/23, 7.2% of all local authority-collected waste (LACW) in England (1.8 million tonnes) was sent to landfill, a reduction of 16% (0.3 million tonnes) compared to 2021/22. Meanwhile, 40.7% (10 million tonnes) of all LACW was sent for recycling which is decline of 7.7% (0.8 million tonnes) from the previous year[82]. In 2022/23, the South East handled the largest amount of LACW (3.9 million tonnes) which accounted for 15.9% of all LACW in England. London had the lowest recycling rate at 29% of total LACW, meanwhile the South East recycled 44.8% of total LACW[83].

[78] Thames Water (2024) Thames Water Annual Report 2024/24

[79] Environment Agency (2024) Water resources 2023-2024: analysis of the water industry's annual water resources performance Available at https://www.gov.uk/government/publications/water-resources-2023-2024-analysis-of-the-water-industrys-annual-water-resources-performance/water-resources-2023-2024-analysis-of-the-water-industrys-annual-water-resources-performance [Accessed March 2025].

[80] Thames Water (2023) Revised Draft Water Resources Management Plan 2024 Available at https://www.thameswater.co.uk/media-library/home/about-us/regulation/water-resources/wrmp24-draft/technical-report/current-and-future-water-supply.pdf [Accessed March 2025]

[81] The fraction of municipal waste that will decompose within a landfill site to produce methane, a potent greenhouse gas.

[82] Department for Environment, Food and Rural Affairs (2025) Local authority collected waste management - annual results 2022/23 Available at https://www.gov.uk/government/statistics/local-authority-collected-waste-management-annual-results/local-authority-collected-waste-management-annual-results-202223 [Accessed March 2025]

[83] Department for Environment, Food and Rural Affairs (2025) Local authority collected waste management - annual results 2022/23 Available at https://www.gov.uk/government/statistics/local-authority-collected-waste-management-annual-results/local-authority-collected-waste-management-annual-results-202223 [Accessed March 2025]

Data on waste arisings is collected in a range of categories. The activities of the water industry contribute to construction, demolition and excavation waste (CDEW), through construction of new infrastructure. The water industry also contributes to several waste streams through the operation of facilities. Waste streams include commercial and industrial waste (C&I) (statistics include waste arisings from the power and utilities sector, which includes water supply and sewage removal), and also hazardous wastes. **Table B-7** to **Table B-10** provide further baseline information regarding waste.

Drought options which require 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 the production of waste through water treatment. Raw water (rainwater, groundwater, water from surface water bodies) could be included in the water treatment, which requires more intense levels of treatment. In 2022/23, Thames Water reported using sludge to generate renewable energy to reduce both the risk of greenhouse gas emissions and the challenges associated with increasing difficulties in recycling sludge to land[84].

Table B-7: Management of all local authority collected waste (2022/23) - Proportions of total local authority collected waste (LACW) (%)[85]

Region	Landfill	Recycling**	Incineration*
London	0.1	29.0	65.2
South East	3.1	44.8	48.2
South West	4.2	48.6	46.0
England	7.2	40.7	49.1

* Incineration includes incineration with energy recovery/without energy recovery. This includes incinerator bottom ash (IBA) and metals from IBA.

** Recycling refers to the proportion of all local authority collected waste sent for recycling, composting, anaerobic digestion or reuse.

Table B-8 Selected Waste Indicators 2012-2022[86]

Waste Indicator	England		Eastern		London		South East		South West	
	2012	2022	2012	2022	2012	2022	2012	2022	2012	2022
Total LACW (million tonnes)	25.0	24.3	2.8	2.8	3.6	3.4	4.1	3.9	2.6	2.5
% of LACW sent to landfill (%)	33.9	7.2	43.6	22.9	25.5	0.1	21.8	3.1	42.8	4.2
Household recycling rate (%)	43.2	41.7	48.5	44.7	34.0	32.7	43.4	45.4	47.2	48.2

[84] Thames Water (2024) Thames Water Annual Report 2023/24 Available at https://www.thameswater.co.uk/media-library/home/about-us/investors/our-results/2024-reports/thames-water-annual-report-2023-24.pdf [Accessed March 2025]

[85] Department for Environment, Food and Rural Affairs (2024) Local authority collected waste management - annual results 2022/23 Available at https://www.gov.uk/government/statistics/local-authority-collected-waste-management-annual-results/local-authority-collected-waste-management-annual-results-202223 [Accessed March 2025]

[86] Department for Environment, Food and Rural Affairs (2024) UK statistics on waste Available at https://www.gov.uk/government/statistics/uk-waste-data/uk-statistics-on-waste#waste-from-commercial-and-industrial-ci-activities [Accessed March 2025]

Table B-9: Waste generation split by responsible economic activity, UK, 2018-20 (million tonnes)[87]

Economic activity	2018 (million tonnes)	2020 (million tonnes)	% change
Commercial & Industrial (C&I)	42.6	39.3	-7.8
Construction, Demolition & Excavation (CDE) (includes dredging)	137.8	117.5	-14.8
Households	26.4	27.0	2.3
Other	15.4	7.5	-51.4
Total	222.2	191.2	-13.9

Table B-10 Biodegradable municipal waste to landfill, England, 2010–2022[88]

Year	Municipal waste to landfill (thousand tonnes)	of which is BMW to landfill (thousand tonnes)	BMW to landfill as % of 1995 target baseline*
2010	20,298	10,339	36%
2012	13,714	6,843	24%
2014	11,688	5,598	19%
2016	10,967	5,132	18%
2018	16,187	8,129	28%
2020	12,381	6,049	21%
2022	10,521	4,968	17%

* Note: 1995 baseline for England is 29 million tonnes

B.3.2 Future Baseline

There are many factors to be considered when predicting future water demand. Population growth and changes in household size will mean that more houses are needed in areas where abstraction is not currently sustainable. Climate change is expected to exacerbate the situation further, as rising temperatures and greater seasonal variation in precipitation are likely to alter the public demand for water[89]. It is projected that the UK will need an additional 5 billion litres a day by 2050 relative to current levels to support a growing population, the economy, food production and protect the environment [90].

[87] Department for Environment, Food and Rural Affairs (2024) UK statistics on waste Available at https://www.gov.uk/government/statistics/uk-waste-data/uk-statistics-on-waste#waste-from-commercial-and-industrial-ci-activities [Accessed March 2025]

[88] Department for Environment, Food and Rural Affairs (2024) UK statistics on waste Available at https://www.gov.uk/government/statistics/uk-waste-data/uk-statistics-on-waste#waste-from-commercial-and-industrial-ci-activities [Accessed March 2025]

[89] POST (Parliamentary Office of Science and Technology). 2021. POSTbrief 40, Water supply resilience and climate change. UK Parliament

[90] GOV.UK (2024), Meeting our Water Needs for the Next 25 Years Available at https://environmentagency.blog.gov.uk/2024/03/21/meeting-our-water-needs-for-the-next-25-years/ [Accessed March 2025]

The Government's National Infrastructure Strategy[91] 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 deal with waste in accordance with the waste hierarchy moving towards a zero-waste economy. The Government's Resource and Waste Strategy[92] emphasises the importance of natural capital as one of the most valuable assets and sets out how England will preserve material resources, promote resource efficiency and a move towards a circular economy whilst minimising damage to the natural environment and reducing and managing waste carefully. Targets for England by 2035 include a 65% recycling rate for municipal solid waste and less than 10% of municipal solid waste to landfill.

The NPPF[93] emphasises the need for achieving sustainable development, through making effective use of land and existing resources, using natural resources prudently and supporting renewable and low carbon energy. The Government has committed to deliver a decarbonised power sector by 2035 and net zero by 2050 (in line with the Paris agreement[94]). In the first quarter of 2023, renewables generated a record 48% of the UK's electricity[95]. Although there have been positive developments in achieving this objective, the 2023 Climate Change Committee to the UK Parliament notes that action is significantly off track in a range of areas such as surface transport, electricity supply, buildings, electricity prices, land use, agriculture and industry[96]. Energy demand in the region has increased significantly in recent years and is expected to continue to rise in the future.

The Environment Agency's national framework for water resources[97] includes ambitious targets to reduce average per capita consumption (PCC) to 110 litres per person per day (l/p/d) by 2050. In its 2024 WRMP, Thames Water pledge to help customers use less water through the continued roll out smart water meters together with targeted campaigns on how to save water, carrying out more Smarter Visits for homes and businesses, and sharing handy advice on basic home repairs, such as fixing dripping taps. Thames Water is also looking into new ways to use non-potable water, such as for watering gardens and golf courses[98]. Additionally, the company has set a goal to halve leakage levels by 2050 compared to 2017-18 figures. This ambitious target reflects Thames Water's dedication to enhancing infrastructure and implementing advanced technologies to detect and repair leaks efficiently[99].

B.3.3 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

[91] HM Treasury Infrastructure UK (2020) National Infrastructure Strategy Available at https://www.gov.uk/government/publications/national-infrastructure-strategy [Accessed March 2025]

[92] HM Government (2018) Our waste, our resources: A strategy for England Available at https://assets.publishing.service.gov.uk/media/5c18f11740f0b60bbee0d827/resources-waste-strategy-dec-2018.pdf [Accessed March 2025]

[93] Ministry of Housing, Communities & Local Government (2023) National Planning Policy Framework, December 2024. Available at https://www.gov.uk/government/publications/national-planning-policy-framework--2 [Accessed March 2025]

[94] United Nations (2015) The Paris Agreement Available at https://www.un.org/en/climatechange/paris-agreement [Accessed March 2025]

[95] GOV.UK (2023) Energy security boost with multi-million backing for renewables. Available at https://www.gov.uk/government/news/energy-security-boost-with-multi-million-backing-for-renewables [Accessed March 2025]

[96] Climate Change Committee (2023) Progress in reducing emissions 2023 Report to Parliament. Available at https://www.theccc.org.uk/publication/2023-progress-report-to-parliament/ [Accessed March 2025]

[97] Environment Agency (2020) Meeting our future water needs: a national framework for water resources Available at https://www.gov.uk/government/publications/meeting-our-future-water-needs-a-national-framework-for-water-resources/meeting-our-future-water-needs-a-national-framework-for-water-resources-accessible-summary [Accessed March 2025]

[98] Thames Water (2023) Overview Available at https://www.thameswater.co.uk/media-library/home/about-us/regulation/water-resources/wrmp24/overview.pdf [Accessed March 2025]

[99] Thames Water Utilities Limited (2024) Water Resources Management Plan 2024 Available at https://www.thameswater.co.uk/about-us/regulation/water-resources [Accessed March 2025).

- 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.
- The need to continue to reduce leakage from the water supply system to help reduce demand for water.
- Daily consumption of water is higher than the national average in the area and consequently there is a continued need to encourage more efficient water use.

B.4 WATER

B.4.1 Baseline

Post Brexit, the UK has retained the principles of the Water Framework Directive (WFD) within its domestic law, specifically through the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017[100], which continue to guide water quality management and environmental protection within the UK. In the context of the WFD, the water environment includes rivers, lakes, estuaries, groundwater and coastal waters out to one nautical mile. The aquatic environment of the River Thames basin remains a key focus, with ongoing monitoring and assessment to ensure that water quality standards are upheld.

Surface Waters: Rivers and Canals

Thames Water's supply area (see **Figure 1-1**) lies almost entirely within the catchment of the River Thames and Thames Tideway. The River Thames rises to the west as springs from the limestone of the Cotswolds and flows eastwards to the sea downstream of London. Key tributaries in the Cotswolds include the Rivers Coln, Windrush, and Evenlode. WRZs within the Thames Valley (SWOX, Kennet Valley, SWA and Henley) encompass the major River Thames tributaries: Rivers Cherwell, Kennet, Loddon, Thame and Windrush and the Kennet and Avon Canal. The London WRZ, centred on metropolitan London, includes the lower freshwater River Thames up to its tidal limit at LON_0027 as well as a number of smaller river systems that discharge to the inner Thames estuary (Thames Tideway). These include the River Lee and the River Darent. The Guildford WRZ is based on the upper River Wey. Surface water features for the SEA study area are shown in **Figure B-4.**

Surface Waters: Lakes and Reservoirs

There are no significant natural lakes within River Thames catchment area. However, there are a series of off-line reservoirs for a variety of purposes and a significant number of flooded former gravel excavations, for example, in the River Lee valley and to the west of London. Grimsbury and SWOX_0006 Reservoirs are within the SWOX WRZ. There are also the LON_0011 Reservoirs (in west London) and the Lee Valley Reservoirs (in north London), both within the London WRZ.

[100] UK Gov (2017) The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017

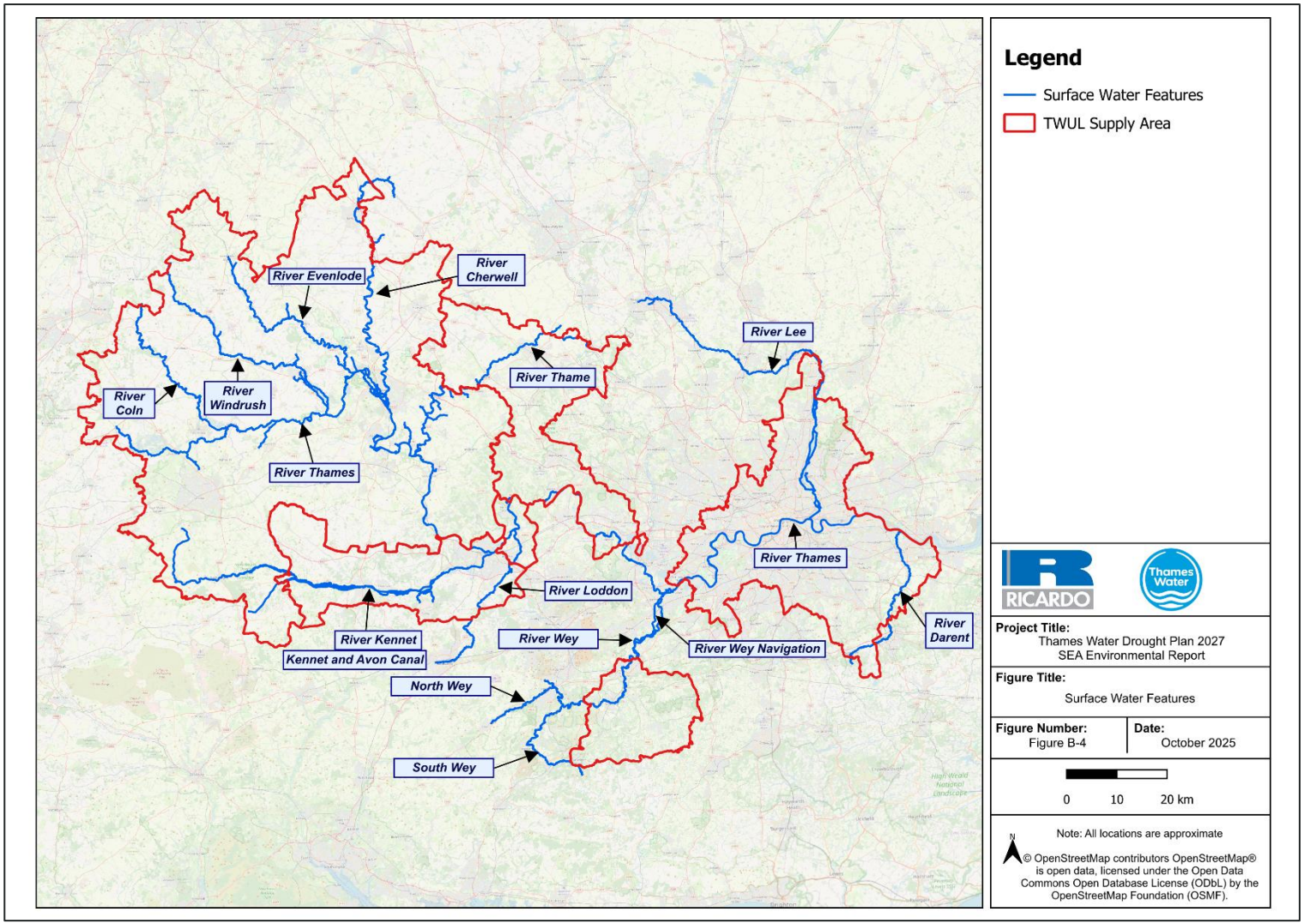

Figure B-4: Surface Water Features of SEA study area

Groundwater

Approximately 80% of Thames Water's supplies are derived from surface water abstraction (largely from the upper, lower Thames and the lower Lee) and the remainder is derived from groundwater abstraction. However, as for most of south east England, during periods of prolonged low rainfall leading to a serious drought, water supply is largely sustained by the utilisation of reservoir storage, groundwater abstraction and baseflow within rivers, the latter being derived from the outflow of groundwater from the major aquifers within the catchment. Thames Water also have a desalination water treatment works on the River Thames (Tideway) that can supplement water supplies at times of high demand and/or during drought conditions.

The Environment Agency considers that licensed groundwater abstraction is fully utilised over much of the Thames river basin. Both the quantity and quality of groundwater is extremely important in maintaining these resources. Groundwater is vulnerable to pollution from surface activities since aquifers underlie up to two-thirds of the land surface in this densely populated area. Groundwater quality issues include high nitrate levels in some aquifers. Implementation of DP options which increase the frequency and speed of groundwater abstractions (i.e. at a faster rate than groundwater source can be replenished) can potentially result in a negative impact on groundwater quality due to reduced dilution.

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[101]: where low groundwater levels are responsible for an adverse impact on rivers[102] and wetlands[103] normally reliant on groundwater; where abstraction of groundwater has led to saline intrusion[104]; where it is possible that the amount of groundwater abstracted will not be replaced each year by rainfall[105]. For a groundwater body to be at good status overall, both chemical status and quantitative status must be good. 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.

Source Protection Zones (SPZ) provide additional protection to safeguard drinking water quality. This is achieved through constraining the proximity of an activity that may impact upon drinking water abstraction. They are defined around large and public potable groundwater abstraction sites, and the groundwater travel time to an abstraction. There are over 161 SPZs within the Thames Water supply area[106].

Estuaries

The Thames Tideway (or estuary) is one of the most ecologically diverse estuaries in England and Wales. The Thames River Basin District includes 11 estuarine ('transitional waters'). The Thames Tideway is classified as hypernutrified but there is little evidence of ecological damage as a result the high nutrient status. Natural turbidity resulting in a reduction of light penetration limits adverse impacts. The Thames Tideway does suffer from the impacts of discharges of storm sewage: this is being addressed through the current construction of Thames Tideway Scheme, which is designed to address a significant number of combined overflows.

Monitoring

Thames Water, other water companies and the Environment Agency monitor the ongoing water resources situation in all parts of the Thames catchment using a hydrometric network from which an

[101] UK Technical Advisory Group on the Water Framework Directive (2012) Paper 11b(ii): Groundwater Quantitative Classification for the purposes of the Water Framework Directive.

[102] The surface water dependent test for Groundwater Water Quantitative Status

[103] Groundwater Water Quantitative Status (Groundwater Water Dependent Terrestrial Ecosystems - Wetlands Test)

[104] The Groundwater Quantitative Risk (Saline or other intrusions Test)

[105] Groundwater Quantitative Risk (Groundwater Water Resource Balance Test)

[106] Department for Environment, Food and Rural Affairs (2024) Source Protection Zones [Merged] Available at https://www.data.gov.uk/dataset/09889a48-0439-4bbe-8f2a-87bba26fbbf5/source-protection-zones-merged1 [Accessed March 2025]

accurate assessment of the ongoing water resources situation in all parts of the Thames catchment can be established and reliable forecasts undertaken. For Thames Water's supply area the essential data requirements are fulfilled by:

- Daily measurements of total reservoir storage in the London Reservoirs and SWOX_0006 Reservoir.
- River flow at key locations related to abstractions to principal reservoirs – key measurement points are the River Thames above LON_0027 (limit of freshwater Thames) and the River Thames at SWOX_0006 (see **Table B-11**).
- Levels of key groundwater sources/key aquifer monitoring boreholes.
- Demand for each water resource zone.

Key hydrological variables are monitored throughout the catchment such as river flows at a wide range of locations, groundwater levels, rainfall and soil moisture deficits (SMDs).

At the most downstream flow gauge on the River Thames, at Kingston in the London WRZ, long term average (median 1883-2023) flow is recorded as 3,465 Ml/d. This flow gauge is downstream of all abstractions made from the river, including those for potable supply, agriculture and industrial use; and downstream of all discharges including returns from wastewater treatment works and industrial cooling water returns. **Table B-11** indicates the main influences on river flows in the catchments upstream of the listed river flow gauge.

Table B-11: Measured long term water flows in selected parts of the River Thames catchment

WRZ	Flow gauge	Influences on flow	Measured long-term flow (Ml/d)		
			Q10 (high flow)	Q50 (median flow)	Q95 (low flow)
SWOX	Thames at Days Weir (1883-2015) (Lowest gauge on Thames in SWOX)	Runoff reduced by abstraction for public water supply and industrial/ agricultural abstraction; increased by effluent returns. River levels affected by lock movements and gates.	5,996	1,452	285
Kennet Valley	Kennet at Theale (1961-2023) (Lowest gauge on Kennet)	A mainly pervious catchment (80% Chalk). High baseflow component but responsive contribution from the River Enbourne. Flows influenced by groundwater abstraction/recharge (KEN_0006). Abstraction for industrial/agricultural purposes. Minor contribution to the Kennet & Avon Canal. Little net impact of abstractions and discharges.	1,477	692	328
Henley	Thames at Bray Weir (1959-1982) (Downstream of Henley WRZ)	Baseflow sustained mainly from the Chalk and the Oolites. Reservoirs in catchment affect runoff. Regulation from surface water and/or ground water. Runoff reduced by abstraction for public water supply and industrial/ agricultural uses; also influenced by groundwater	10,973	3,577	1,318
London	Thames at Kingston (1883-2023) (Lowest		13,910	3,465	651

WRZ	Flow gauge	Influences on flow	Measured long-term flow (Ml/d)		
			Q10 (high flow)	Q50 (median flow)	Q95 (low flow)
	gauge on freshwater Thames)	abstraction/recharge. Runoff increased by effluent returns.			
Guildford	Wey at Weybridge (1979-2023) (Upstream of confluence with Thames (only gauge on lower Wey))	Largely permeable upper catchment (Chalk and Upper Greensand of the North Downs). No available information on flow influences.	1,246	458	217

Note: SWA WRZ not included as is groundwater-dependent and does not contain any principal catchments or surface water abstractions.

High flow included is the Q10 flow statistic. River flow at the river flow gauge is equal to or greater than the listed flow for 10% of the time.

Average flow included is the median flow statistic, Q50. River flow at the river flow gauge is both greater than and less than the listed flow for 50% of the time.

Low flow included is the Q95 flow statistic. River flow at the river flow gauge is equal to or less than the listed flow for 5% of the time.

Water Availability

Water abstraction can impact upon hydrologically sensitive nationally and internationally designated sites and/ or influence wider biodiversity. Water abstraction can also have a bearing on the landscape in terms of visual amenity, particularly in landscapes designated as National Landscapes or that form part of a National Park.

The Environment Agency is responsible for managing water resources in England to ensure there is enough water for people, industry and agriculture as well as a healthy environment. Abstraction Licensing Strategies (ALS) set out how water resources will be managed within a catchment area. Each ALS provides:

- a consistent and structured approach to local water resource management giving information on water resource availability (where and when) based on environmental needs
- a strategy which ensures all relevant water body objectives are met, outlining the local actions that contribute to achieving water body objectives
- information for licensing decisions:
- what conditions or measures may apply to new water resources activities to make sure they will not cause or contribute to failure or deterioration in ecological status
    - policy on unused and underused licences to make sure water bodies are not deteriorated
    - strategy for managing renewal of time-limited licences
    - management of non time-limited licences, previously exempt abstractions (new authorisations) and ‘discharge rich’ catchments
- actions to restore sustainable abstraction within designated sites or where water bodies are failing the EFI (Environmental Flow Indicator) by:
    - identifying management solutions which are already in place
    - outlining site specific flow targets developed for each designated site

- where serious damage has been confirmed and explain actions to restore sustainable abstraction within affected catchments

Additionally, the local impacts of any proposed abstraction are considered to ensure the rights of existing water users and the environment is protected. ALS areas are based on river catchment boundaries and overlap with Thames Water's supply area.

Within each ALS, river flows and groundwater levels are monitored at Assessment Points (significant points on rivers) and assessed alongside the volume of water which has been abstracted on average over the previous six years and the situation if all abstraction licences were used to full capacity. This data is used to determine the water availability for each water body. Water availability falls into the following categories:

- **Water available for licensing:** There is more water than required to meet the needs of the environment. New licences can be considered depending on local and downstream impacts.
- **Restricted water available for licensing**: If all licensed water is abstracted there will not be enough water left for the needs of the environment. No new consumptive licences would be granted and restrictions may be in place. Trading from an existing licence holder can occur.
- **Water not available for licensing**: Water body flows are below the indicative flow requirement to help support Good Ecological Status (as required by the Water Framework Directive). No further consumptive licences will be granted. Trading from an existing licence holder can occur.

The results of the most recent ALSs, completed in 2019, have been mapped onto WFD Cycle 2 boundaries and are represented by different water resource availability colours showing the availability of water resource for further abstraction. **Figure B-5** shows the Environment Agency representation of resource availability based on the worst downstream water body at low flows (the flow percentile called Q95), focusing on the Thames River Basin District and Thames Water supply area. The availability of water varies throughout the SEA study area (**Figure B-5**), however, is it evident that the status of most rivers is identified as 'water not available for licensing'.

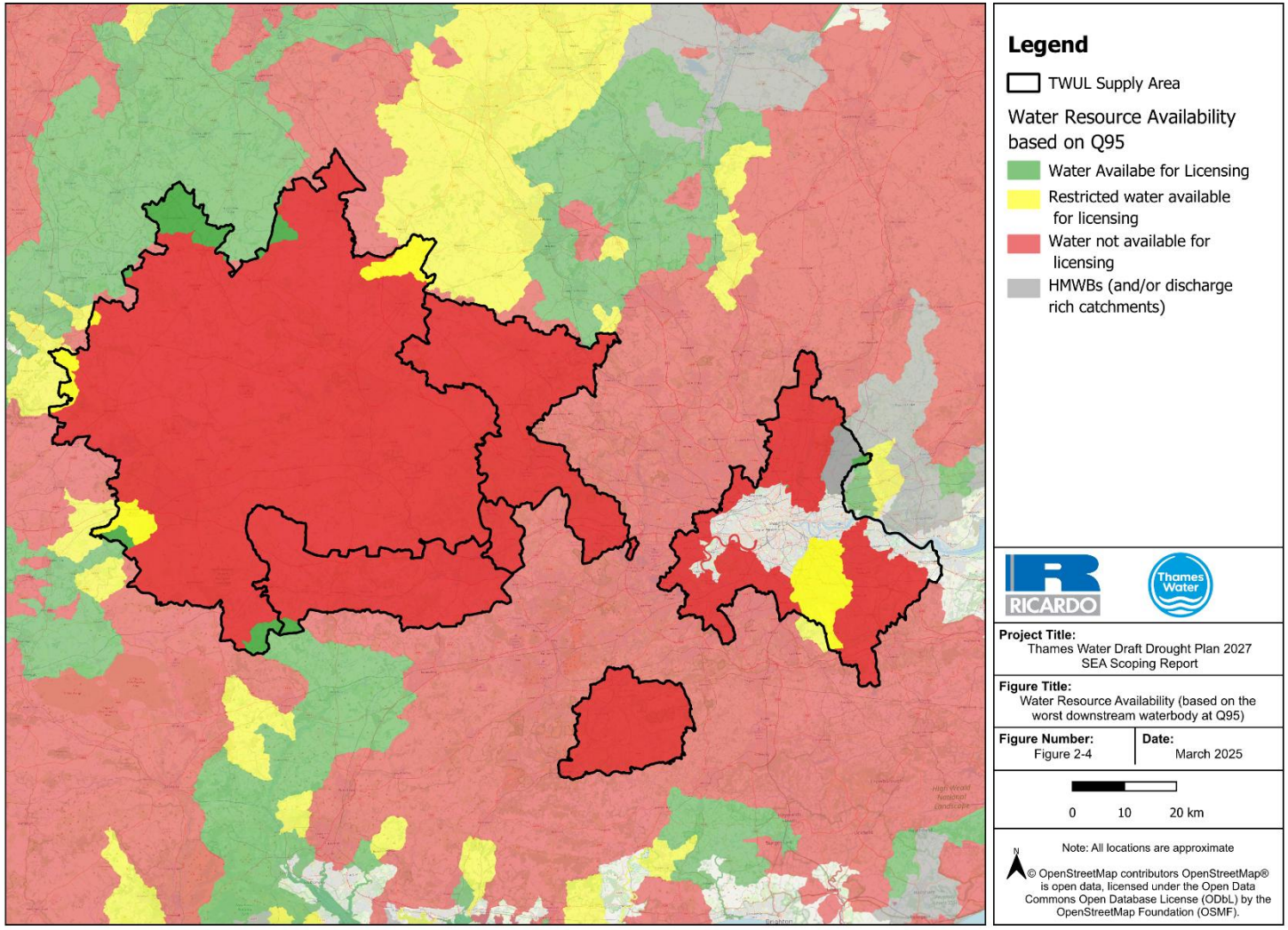

Figure B-5: Water Resource Availability at Q95

Water Quality

Water quality is classified according to several quality elements in line with the requirements of the WFD.

For surface waters, there are two separate status classifications for water bodies: ecological and chemical. For a water body to be in overall 'good' status both ecological and chemical status must be at least 'good'. Biological status classification considers the condition of biological quality elements, e.g. aquatic invertebrates, plants and fish, the morphology of the habitat available, concentrations of supporting physico-chemical elements e.g. oxygen or ammonia and concentrations of specific pollutants.

The Thames river basin district covers an area of 16,200km^2 and includes 20 management catchments which range from chalk streams and aquifers to tidal and coastal marshes[107]. These support a rich diversity of species and habitats some of which are of national or European importance.

Out of the 501 surface water bodies in the Thames River Basin District, 4% were rated as 'bad', 23% as 'poor', 67% as 'moderate', 6% as 'good', and none as 'high' in terms of their ecological status or potential. Regarding chemical status, 100% of the water bodies were classified as 'bad' (see **Table B-12**).

Table B-12: Ecological and chemical 2022 classification for surface waters – Thames River Basin[108,109]

No. of water bodies	Ecological status or potential					Chemical Status	
	Bad	Poor	Moderate	Good	High	Fail	Good
501	19	117	334	31	0	500	0

Groundwater bodies are classified based on two separate criteria: chemical status and quantitative status. Both classifications must be reported alongside the overall status of the groundwater body. For a groundwater body to be considered in good overall status, both chemical and quantitative statuses must be good. Additionally, there is a requirement to identify and report any deterioration in groundwater quality due to pollution, which could lead to a future decline in status.

Out of 47 groundwater bodies in the Thames River Basin District, 17 of them are classified as good for quantitative status (36%) and 30 for chemical status (64%) (see **Table B-13**). The main reasons for poor status were identified as high or rising nitrate concentrations, with some failures for pesticides and other chemicals. The main reason for poor quantitative status is that abstraction levels, mainly for public water supply, exceed the rate at which aquifers recharge[110].

[107] Environment Agency (2022), Thames river basin district river basin management plan: updated 2022 Available at https://www.gov.uk/guidance/thames-river-basin-district-river-basin-management-plan-updated-2022 [Accessed March 2025]

[108] Note: Data only references 500 surface water bodies under the chemical status table.

[109] Environment Agency (2022), Thames river basin district river basin management plan: updated 2022 Available at https://www.gov.uk/guidance/thames-river-basin-district-river-basin-management-plan-updated-2022 [Accessed March 2025]

[110] Environment Agency (2022), Thames river basin district river basin management plan: updated 2022 Available at https://www.gov.uk/guidance/thames-river-basin-district-river-basin-management-plan-updated-2022 [Accessed March 2025]

Table B-13: Chemical and quantitative 2019 Cycle 3 classification for groundwaters – Thames River Basin District[111]

No. of water bodies	Quantitative status		Chemical status	
	Poor	Good	Poor	Good
47	17	30	29	18

The RBMPs for the Thames river basin district highlight significant water management issues which prevent the sustainable management of water within each river basin as presented in **Table B-14**. Physical modifications and pollution from wastewater affect the highest proportion of water bodies followed by pollution from towns, cities and transport.

Table B-14: Water management issues[112]

Water management issues	Percentage of water bodies affected
Physical modifications	32
Pollution from wastewater	26
Pollution from towns, cities and transport	19
Pollution from rural areas	17
Changes to the natural flow and level of water	4
Negative effects of invasive non-native species	1

Drinking Water Quality

Data relating to drinking water quality, pollution incidents, and air quality, which may have indirect effects on amenity and human health, are covered in separate sections of this Environmental Report. The Consumer Council for Water (CCW) report (2024-25) indicates that complaints rose by 29% to 7,977, the highest total since 2015-16. For every 10,000 connections, 139 complaints were made regarding Thames Water to CCW. Among water and sewerage companies, Thames Water was one of the two companies with the highest number of complaints per household served that were escalated to CCW[113]. In 2023-24, Thames Water set a target to reduce water and wastewater complaints by 15% to 28,060. During this period, they received 25,161 complaints, exceeding their reduction target by 10%[114].

Flood Risk

Flooding can result from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and

[111] Environment Agency (2021) Classifications data for Thames River Basin District Available at https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/6/classifications (Accessed March 2025)

[112] Environment Agency (2022) Thames river basin district river basin management plan: updated 2022 Available at https://www.gov.uk/guidance/thames-river-basin-district-river-basin-management-plan-updated-2022 [Accessed March 2025]

[113] CCW (2024) Review of household customer complaint handling by water companies in England and Wales (1 April 2023 - 31 March 2024) Available at https://www.ccw.org.uk/publication/household-complaint-handling-report-2024/#:~:text=CCW%20has%20published%20its%20annual,or%20to%20a%20satisfactory%20standard. [Accessed March 2025]

[114] Thames Water (2024) Customer care performance and improvements Available at https://www.thameswater.co.uk/about-us/performance/customer-care-performance-and-improvements [Accessed March 2025]

other artificial sources. The Environment Agency's Flood Risk Maps available on its website show what is at risk of flooding, including people, economic activity and natural and historic environment[115].

More than 15 million people reside in the Thames River Basin District, with approximately 1.7 million individuals at risk of flooding from rivers and the sea, and 2.3 million at risk of surface water flooding[116].

The catchment-wide river flooding which occurs in the Thames River Basin District typically occurs following periods of heavy and prolonged rainfall events where the catchment is either frozen or saturated. This tends to take place between autumn and spring. The Thames River Basin District is made up of the following:

- 24 Flood Risk Areas (FRAs) at significant risk of flooding from main rivers and the sea
- 17 FRAs at significant risk of flooding from surface water
- Four Strategic Areas (SAs) as locally important areas

Saltmarsh is an important natural resource and ecosystem service. Through reducing wave energy close to tidal defences, it can provide demonstrable flood and coastal risk management benefits, as well as supporting wildlife habitats and species of national and international significance. Saltmarsh extent is conserved and enhanced through management measures driven in particular by the Habitats and Birds Directives and the WFD. The DP has the potential to affect saltmarsh extent if any of the following occur: change in drainage patterns, disruption to the estuarine processes and changes in land use on or adjacent to the marsh[117].

Flood risk across the WRSE region is diverse and can occur from a wide range of sources including rivers and the sea, groundwater, reservoir and surface water. Climate change, is projected to result in more extreme weather events which alongside projected increases in sea level is likely to have an impact on the future flood risk of the region.

B.4.2 Future Baseline

Water Availability and Regional Planning

Thames Water's 2024 Water Resource Management Plan (WRMP)[118] and its 2022 DP[119] provide details on how water resources will be managed and secured for the future, including in response to the risks presented by climate change. The WRMP forecasts that the Thames Water region requires an additional 376Ml/d of water in 2035, 1060Ml/d in 2050 and 1100Ml/d in 2075. The long-term deficit is driven by various factors, including population growth, climate change, environmental improvements and drought resilience.

In August 2018, the regulators of water in England (Defra, DWI, EA and Ofwat) set out an expectation for greater co-ordination of water resources planning to secure future resilience through strategic solutions that water companies are unlikely to have capacity to deliver alone. Five regional groups were created to cover England and each group must produce a single Regional Plan that builds resilience to a range of uncertainties and future scenarios, whilst considering the needs of other sectors. The EA published the Water Resources National Framework[120] (WRNF) in March 2020 which set out the forecasted future need for water across England as well as the deliverables of the Regional Plans. The

[115] Environment Agency (2013) Flood Risk Maps – Risk of Flooding from Surface water – Thames River Basin District: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/456969/LIT8979_FloodRiskMaps_Thames_SurfaceWater_v2.pdf [Accessed March 2025]

[116] Environment Agency (2022) Thames River Basin District Flood Risk Management Plan 2021 to 2027 Available at https://assets.publishing.service.gov.uk/media/6380a45d8fa8f56ea9d462d8/Thames-FRMP-2021-2027.pdf [Accessed March 2025]

[117] Environment Agency (2007) Saltmarsh management manual Available at https://assets.publishing.service.gov.uk/media/602bf8d8e90e070556671435/Saltmarsh_management_manual_Technical_report.pdf [Accessed March 2025]

[118] Thames Water (2024) Water Resources Management Plan 2024, October 2024. Available at: https://www.thameswater.co.uk/about-us/regulation/water-resources [Accessed March 2025]

[119] Thames Water (2022) Drought Plan 2022. Available at https://www.thameswater.co.uk/about-us/regulation/drought-plan [Accessed March 2025]

[120] Environment Agency (2020) Meeting our Future Water Needs: a National Framework for Water Resources

WRNF set the ambition that, by 2050, no WRZ in England should have a risk of Level 4 drought restrictions (rota cuts) that is worse than once every 1 in 500 years on average. It is intended that the Regional Plans inform water company WRMPs and will:

- **Reduce demand** to 110 litres of water per person, per day by 2050 and drive down water use across all sectors
- **Halve leakage rates** by 2050
- **Develop new supplies** such as reservoirs, water reuse schemes and desalination plants
- **Move water to where it is needed** through more transfers of different scales and lengths
- **Reduce the use of drought measures** that have an impact on the environment

Water Resources South East (WRSE) comprises Thames Water, South East Water, SES Water, Affinity Water, Southern Water and Portsmouth Water and has been set up to oversee water resource planning for the wider South East region. The role of WRSE is to plan how best to manage the region's water resources and where investment is required whilst meeting it's aims of ensuring an affordable, resilient and sustainable water supply for the public, industry and natural environment.

Water Quality

Water quality is likely to continue to be maintained and improved through legislative drivers such as the WFD. The WFD originally set a target of aiming to achieve at least 'good status' in all waterbodies by 2015. However, provided that certain conditions are satisfied, in some cases the achievement of good status has been delayed until 2027 or 2039.The primary objective in the short-term is to ensure no deterioration in status between status classes: the 2015 water body classification is the baseline from which deterioration between classes is assessed; no deterioration between status classes is permitted unless certain and specific conditions apply.

Climate Change

UKCP[121] has found that climate change trends projected over UK land for the 21st century are broadly consistent with earlier projections showing an increased chance of milder, wetter winters and hotter, drier summers along with an increase in the frequency and intensity of extremes. This will increase the incidence rate of storms and flooding. It likely that climate change may also contribute to shifts in the frequency and duration of intense storms during the summer months, resulting in more regular and widespread flash flooding from overburdened drainage systems and rivers.

The UK Climate Change Risk Assessment (CCRA) 2022 Technical Report[122] provides full analysis of the climate change risks and opportunities for the UK. This assessment projects that the severity of extremes will increase with global warming, including more severe meteorological, agricultural and hydrological droughts with implications for water resource management. The assessment identified several risk areas for climate change risks associated with the water sector[123], including:

- Water infrastructure, such as reservoirs, dams, pipelines, water treatment plants and sewage treatment plants, are all at risk from the impacts of climate change, especially increases in the frequency and intensity of surface water and coastal flooding.
- Water infrastructure assets represent a key element of the UK infrastructure system and could affect, or be affected by, failures of other assets due to extreme weather, such as energy systems, transport and information and communications technology (ICT).
- There are also risks to buried infrastructure, such as water pipelines, with damage potentially becoming more frequent in future due to flooding and subsidence

[121] UKCP18 website. UK Climate projections (2022) Headline findings, August 2022. Available at: https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18_headline_findings_v4_aug22.pdf [Accessed March 2025]

[122] UK Climate Risk Assessment (2022) The UK Climate Change Risk Assessment 2022 Technical Report Available at https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-2022 [Accessed March 2025]

[123] UK Climate Risk Assessment (2021) UK Climate Risk Assessment (CCRA3) Evidence Report 2021, Water Briefing. Available at: https://www.ukclimaterisk.org/publications/water-sector-briefing/#publication-downloads [Accessed March 2025]

- More frequent flooding could also impact on water treatment facilities leading to potential reductions in water quality, in turn impacting upon health.
- Future projections of more frequent and intense dry periods lead to concerns around the availability of public water supplies in future, especially in England and parts of Wales. Private water supplies are also at risk.
- Aquifers near the coast could be at greater risk from saltwater intrusion due to sea level rise, though the risk is thought to be low in places where aquifers are important water sources.

Flood Risk

The NPPF states that inappropriate development in areas at risk of flooding (in Flood Zone 1[124], Flood Zone 2[125], Flood Zone 3a[126] or Flood Zone 3b - the functional floodplain); should be avoided by directing development away from areas at highest risk (whether existing or future). The NPPF requires that where development is necessary, it should be made safe without increasing flood risk elsewhere, as defined in Government Guidance on flood risk and coastal change[127]. 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 current and future 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 Government's 25 year Environment Plan looks to strengthen the relevant protections in the NPPF and, in addition, focus on using more natural flood management solutions, increase the uptake of sustainable drainage systems and improve resilience and recovery times of at risk properties[128,129].

The Environment Agency and Natural Resources Wales have produced Catchment Flood Risk Plans (CFMPs)[130] and Flood risk management plans (FRMPs)[131] for England and Wales respectively. Through these plans, inland flood risk across all of England and Wales has been assessed. The plans consider all types of inland flooding, from rivers, ground water, surface water and tidal flooding. The role of plans is to establish flood risk management policies which will deliver sustainable flood risk management for the long term. This is essential for effective investment decisions for the future and to help prepare effectively for the impact of drought events as a result of climate change. The plans will help target the areas that are at greatest risk and provide information on the likely future flood risk, which will help establish the future baseline. The Thames CFMP[132] assumes the following key trends:

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[124] Low probability of river or sea flooding (<0.1%) which has critical drainage problems

[125] Medium probability of river (1%-0.1%) or sea flooding (0.5%-0.1%)

[126] High probability of river (>1%) or sea flooding (>0.5%)

[127] Ministry of Housing, Communities & Local Government (2014 updated 2022) Flood risk and coastal change. Available at https://www.gov.uk/guidance/flood-risk-and-coastal-change [Accessed March 2025]

[128] HM Government (2018) A Green Future: Our 25 Year Plan to Improve the Environment Available at https://www.gov.uk/government/publications/25-year-environment-plan [Accessed March 2025]

[129] Department for Environment, Food & Rural Affairs (2023) At a glance: summary of targets in our 25 year environment plan Updated 17 February 2023t Available at https://www.gov.uk/government/publications/25-year-environment-plan/25-year-environment-plan-our-targets-at-a-glance [Accessed March 2025]

[130] Environment Agency (2009) Catchment Flood Management Plans. https://www.gov.uk/government/collections/catchment-flood-management-plans#:~:text=Catchment%20flood%20management%20plans%20(CFMPs,and%20Humber%20River%20Basin%20Districts. [Accessed October 2025]

[131] Natural Resources Wales (2023) Flood risk management plans 2023 to 2029 Available at https://naturalresources.wales/evidence-and-data/research-and-reports/flooding-reports-evidence-and-data/flood-risk-management-plans/?lang=en [Accessed October 2025]

[132] Environment Agency (2009) Thames Catchment Flood Management Plan – Summary Report 2009. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/293903/Thames_Catchment_Flood_Management_Plan.pdf [Accessed March 2025]

- Milder wetter winters resulting in increases in peak river flows of 20%, meaning that flooding will happen more often and large scale severe flooding will be more likely to happen.
- More frequent, short duration intense storms in summer causing more widespread and regular flash flooding from overwhelmed drainage systems and some rivers.

B.4.3 Key Issues

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

- The need to further improve the quality of the region's river, estuarine and coastal waters taking into account WFD objectives and ensure no deterioration where improvement is not feasible.
- The need to maintain the quantity and quality of groundwater resources taking into account WFD objectives and ensure no deterioration.
- The need to improve the resilience, flexibility and sustainability of water resources in the region, particularly in light of potential climate change impacts on surface waters and groundwaters.
- The need to ensure sustainable abstraction to protect the water environment and meet society's needs for a resilient water supply.
- The need to ensure that people understand the value of water.

Flooding is not viewed as a key issue for the SEA water topic, because none of the drought options involve the construction of permanent physical infrastructure within areas at risk of flooding. One potential drought option for inclusion in DP 2027 involves river augmentation (the KEN_0006). The KEN_0006 is a strategic drought option, the licence for which is held by the Environment Agency. Operation of the scheme would be managed between Thames Water and the Environment Agency, taking into consideration environmental implications.

B.5 SOIL, GEOLOGY AND LAND USE

B.5.1 Baseline

Geology

Geological sites maybe sensitive to changes in water quality, water levels (for example waterlogged deposits), pollution and land use practices. The River Thames river catchment is geologically diverse and includes a number of major aquifers. The Thames Valley includes areas of limestone in the Cotswolds as well as Chalk and drift deposits in the Thames floodplain. The London area includes major Chalk aquifers and to the south of London, there are Greensand aquifers (towards the North Downs).

Geological Conservation Review (GCR) sites have been highlighted, which relate to geological important sites, related to their scientific elements and understanding of earth sciences, which are important on a national and international level[133]. GCRS are also designated as SSSIs. Several geological SSSIs are found within the catchments, however some are not directly designated because of geology, although the geological variation does impact on the flora present. The primary reason for a geological SSSI designation is often the presence of disused quarries or geologically significant sites, such as gravel deposits, that provide valuable evidence for reconstructing past climate conditions. There are around 100 GCRs within the Thames supply area.

Soils

[133] JNCC (2020) Geological Conservation Available at http://jncc.defra.gov.uk/page-2947 [Accessed March 2025]

The Soil Map of England and Wales[134] identifies dominant soil subgroups (which are summarised in **Table B-15**). In terms of agricultural land quality, planning policy seeks to protect best and most versatile agricultural land (defined as land in Grades 1, 2 and 3a of the Agricultural Land Classification).

Table B-15: Soil types in the WRZs

Soil type	Occurrence	Characteristics
Elmton 1 and 3	Dominant bands over the WRZs	Shallow well drained calcareous fine loamy soils over limestone
Newmarket 2 and Andover 1	Dominant bands over the WRZs	Shallow well drained calcareous soils
Batcombe and Hornbeam 2	Widespread and occur in dominant bands from east to west across the WRZs	Fine silty over clayey and fine loamy over clayey soils, and deep fine loamy over clayey soils, respectively. Both types are slowly permeable with some slight seasonal waterlogging
Upton 1	Bands to the north of the area covered by the WRZs	Well drained calcareous silty soils over chalk
Wantage 1	Bands to the south of the area covered by the WRZs	Well drained calcareous silty soils over chalk
Denchworth and Windsor	Narrower ribbons to the north of the area covered by the WRZs	Slowly permeable seasonally waterlogged clayey soils
Kelmscot	Narrower ribbons to the north of the area covered by the WRZs	Calcareous fine loamy soils over gravel, variably affected by groundwater
Coombe 1 and 2	Narrower ribbons to the north of the area covered by the WRZs	well drained calcareous fine silty soils over chalk
Wickham 3 and 4 soils	Narrower ribbons to the south of the area covered by the WRZs	Slowly permeable seasonally waterlogged loamy or silty over clayey soils
Grove and Block	Pockets in the west of the WRZs	Moderately permeable calcareous loamy soils over chalky gravel which are affected by groundwater

The majority of land in the Thames river basin is farmed, and it is noted that agricultural practices have a major influence on soil quality. Good soil structure is beneficial to water retention and crop yield. It can be seen from **Figure B-6** that the majority of agricultural land is classified as Grade 3 or higher (with the swathe of agricultural land in the Chilterns being of particularly high 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. The same area also contains pockets of broadleaved, mixed and yew woodland and improved grassland. The Thames River basin features three primary soil landscapes: highly acidic loamy upland soils with a wet peaty surface, slowly permeable loamy and clayey soils that are slightly acidic but rich in base minerals and prone to seasonal waterlogging, and shallow, extremely acidic peaty soils over rock interspersed with patches of freely draining, slightly acidic yet base-rich soils.

Contaminated land is defined as land where substances could cause significant harm to people or protected species; or significant pollution of surface waters or groundwaters. Some types of

[134] Produced by the Soil Survey of England and Wales for MAFF

contaminated land can be designated as special sites for a variety of reasons, including land that seriously affects drinking water, surface waters (e.g. lakes and rivers) and important groundwater sites. Data on contaminated land are compiled by the British Geological Society. Some key risks associated with agricultural land include runoff from compacted and overgrazed fields, carrying organic slurry, contaminated water, fertilisers, pathogens, and fine sediment, either in suspension or dissolved in water.

Minerals Safeguarding Areas (MSAs) are designated by Mineral Planning Authorities for areas that include known deposits of minerals which are desired to be kept safeguarded from unnecessary sterilisation by non-mineral development.

Agricultural land is categorised into five grades, with Grade 1 representing the highest quality and Grade 5 the lowest. In the South East region, the majority of agricultural land falls under Grades 2 and 3, interspersed with urban and non-agricultural areas. Notably, Grade 1 land is found predominantly along the southern and southeastern coasts. The plays a significant role in the nation's agriculture. In 2023, the region's Total Income from Farming (TIFF) was £545 million, marking a 32% decrease from the previous year. Key contributors to the region's agricultural output included fruits, wheat, plants and flowers and milk, collectively accounting for 46% of the total output[135].

The Agriculture Act 2020 aims to reform the agriculture sector and is one of the key mechanisms deployed by the Government to achieve the goals set by the 25YEP. The Government has committed £5 billion over two years to sustainable farming and nature recovery through schemes such as the Environmental Land Management Scheme (ELMS) and Sustainable Farming Incentive (SFI). Since the launch of the SFI in 2022:

- 800,000 hectares of arable land are now farmed without insecticide, reducing harm to pollinators and improving soil health
- 280,000 hectares of low-input grassland are being managed more sustainability, helping to protect biodiversity and improve water quality

The South East of England and London have the highest concentration of licensed landfill sites in the country[136]. Currently, there are around 106 authorized waste sites within the Thames Water supply area[137].

[135] Department for Environment, Food and Rural Affairs (2024) Agricultural facts: South East (including London) region Available at https://www.gov.uk/government/statistics/agricultural-facts-england-regional-profiles/agricultural-facts-south-east-region [Accessed March 2025]

[136] Environment Agency (2002). Dealing with contaminated land in England. Available at: https://assets.publishing.service.gov.uk/media/5a7e48deed915d74e33f13f8/dealing_with_contaminated_land_i.pdf [Accessed March 2025]

[137] Environment Agency (2024) Permitted Waste Sites - Authorised Landfill Site Boundaries Available at https://www.data.gov.uk/dataset/ad695596-d71d-4cbb-8e32-99108371c0ee/permitted-waste-sites-authorised-landfill-site-boundaries1 [Accessed March 2025]

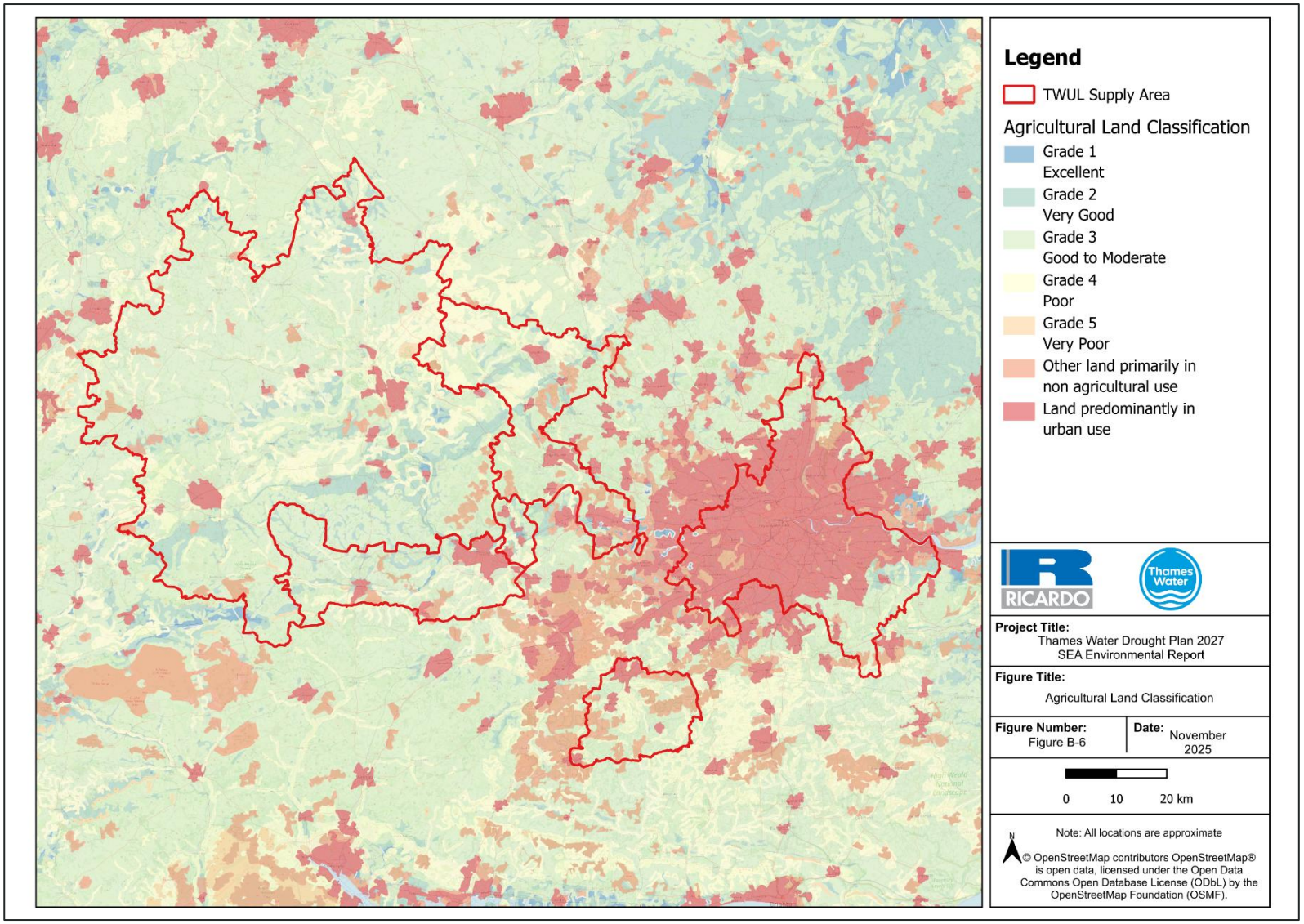

Figure B-6: Agricultural Land Classification in the SEA study area

B.5.2 Future Baseline

The Governments 25 Year Environment Plan (25YEP) [138] outlines how we must improve our approach to soil management, with a target for all England's soils to be managed sustainably and use natural capital thinking to develop appropriate soil metrics and management approaches. This builds on the earlier vision of Defra's Soils Strategy for England[139].

The Sustainable Farming Incentive closed to new applicants in March 2025, however, existing SFI and ELMS agreements, will continue to be rolled out over the coming years. This will contribute to environmental benefits and protection. The SFI will be reformed and open for new applications in 2026.

Water UK published a White Paper on Water[140] and outlined the increased likelihood of agricultural drought by 2050. The paper estimated that 2% of agricultural land is currently classified as poor quality due to drought related impacts and that by 2050 this could increase by between 25 and 43%.

The National Policy Planning Framework (NPPF) seeks to promote the efficient use of land by reusing previously developed (brownfield) sites, as long as they are not of significant environmental value. London and the South East are key areas for brownfield development, with 399,458 and 170,941 potential housing plots, respectively. In comparison, the South West has 71,452 housing plots available on brownfield land[141]. The NPPF also places great importance with respect to Green Belt policy, the aim of which is to prevent urban sprawl by keeping land permanently open[142]. Although the NPPF promotes a presumption in favour of sustainable development, this does not apply where proposed developments may affect designated sites covered by specific policies.

In January 2025, Defra launched a consultation on the new Land Use Framework for England to be published in 2025. The aim of this framework to provide a toolkit to support decision making and inform discussion on how to deliver multiple benefits and support economic growth whilst ensuring long-term food security, deliver development and achieve targets on nature and climate.

B.5.3 Key Issues

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

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

[138] HM Government (2018) A Green Future: Our 25 Year Plan to Improve the Environment. Available at: https://www.gov.uk/government/publications/25-year-environment-plan [Accessed March 2025]

[139] Defra (2009) Safeguarding our soils – A Strategy for England Available at https://assets.publishing.service.gov.uk/media/65fd6fddf1d3a0001132adb8/CD1.I_DEFRA__Safeguarding_our_Soils_A_Strategy_for_England.pdf [Accessed March 2025]

[140] Water UK (2022) Water 2050: A White Paper. Available at: https://www.water.org.uk/sites/default/files/wp/2022/06/Water-UK-Water-2050-A-White-Paper-3.pdf [Accessed March 2025]

[141] CPRE (2022) State of Brownfield 2022: A report by CPRE, the countryside charity Available at https://www.cpre.org.uk/wp-content/uploads/2022/12/State-of-Brownfield-2022-FINAL-FORMATTED-15-12-2022.pdf [Accessed March 2025]

[142] Ministry of Housing, Communities and Local Government (2024) National Planning Policy Framework Available at https://www.gov.uk/government/publications/national-planning-policy-framework--2 [Accessed March 2025]

B.6 AIR AND CLIMATE

B.6.1 Baseline

Local Air Quality

Clean air is a vital natural resource that supports human health, environmental conservation, and economic growth. Airborne pollutants can adversely affect human health, leading to respiratory and lung issues. They can also harm the environment by disrupting ecosystems and damaging plant life when concentrations exceed safe levels. In this context, air quality refers to the amount of pollutants in the atmosphere and the potential risks they pose to both human health and the environment.

Drought options may involve the operation of abstraction and treatment operations in locations where such operations do not normally take place, with the potential for negative effects, although typically in the short term.

The baseline situation can be best described through reference to the local authorities in the Thames Water WRZs that have declared Air Quality Management Areas (AQMA). In the United Kingdom, local authorities are mandated to declare an Air Quality Management Area (AQMA) when it is anticipated that national air quality objectives will not be met within their jurisdiction. This designation applies to areas where air pollution levels are expected to exceed the established standards, posing risks to human health and the environment [143]. The local authorities which have declared an AQMA within their boundaries are illustrated in **Figure B-7**. There are 76 AQMAs in total within the Thames River Basin. The figure demonstrates that the two main pollutants of concern are NO_2 and PM_{10}. The majority of the AQMAs in the UK have been declared because of emissions from road transport.

[143] Smith, L and Adcock, A (2025) Local government air quality responsibilities - House of Commons Library Available at https://commonslibrary.parliament.uk/research-briefings/cbp-8804/ [Accessed March 2025]

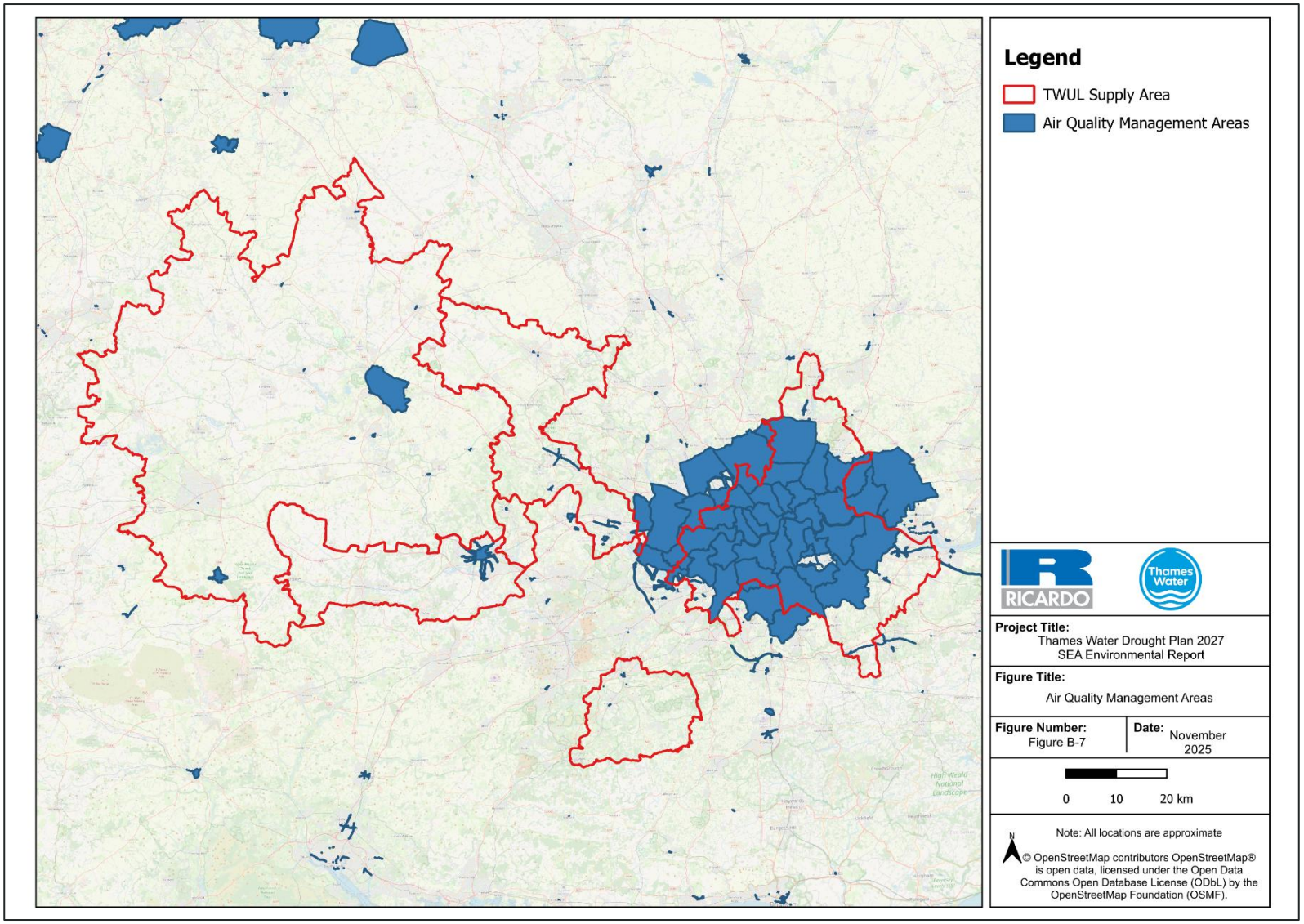

Figure B-7: Air Quality Management Areas

Greenhouse Gases and Climate Change

The predominant greenhouse gas of interest is carbon dioxide (CO_2). National and regional CO_2 emissions totals are provided in **Table B-16** and are apportioned to their source categories **Table B-17.**

Table B-16: End-user carbon dioxide emissions and carbon dioxide emissions per capita by region, 2005 and 2022[144]

Region	2005		2022			
	Total Emissions (Mt CO2e)	Per capita (Mt CO2)	Total Emissions (Mt CO2e)	Per capita (t CO2)	Percentage change between 2005 and 2022 total emissions	Difference between 2005 and 2022 per capita
East of England	47.2	8.5	29.6	4.6	-37.2	-0.5
London	48.9	6.5	26.1	2.9	-46.6	-0.5
South East	65.3	8.0	9.4	3.9	-85.6	-0.5
South West	38.7	7.6	22.1	3.8	-42.8	-0.5
UK	529.5	8.8	301.8	4.5	-43.0	-0.5

Table B-17: Percentage contribution to carbon dioxide emissions by sector (2017) [145]

Region	Industry & Commercial % (millions tonnes)	Domestic % (millions tonnes	Transport % (millions tonnes)
East of England	5.8 (19.6)	7.7 (26.0)	12.3 (41.6)
London	7.8 (29.9)	9.2 (35.1)	7.4 (28.4)
South East	7.6 (20.9)	11.4 (31.3)	16.5 (45.2)
South West	4.7 (21.2)	6.4 (29.0)	10.6(48.1)
UK	90.3 (29.9)	81.3 (26.9)	113.3 (37.5)

At 2.9 tonnes per person per year, London's CO_2 emissions are the lowest in the country (on a regional basis), well below the UK average of 4.5 tonnes[146] and a reduction by almost 50% compared to 2005 emissions. This is, in part, due to high usage of the public transport system (which itself is becoming greener) compared to greater reliance on private cars outside the capital.

[144] Department for Energy Security and Net Zero and Department for Business Energy and Industry Strategy (2024) UK local authority greenhouse gas emissions estimates 2022 Available at https://www.gov.uk/government/collections/uk-local-authority-and-regional-greenhouse-gas-emissions-national-statistics [Accessed March 2025]

[145] Department for Energy Security and Net Zero and Department for Business Energy and Industry Strategy (2024) UK local authority greenhouse gas emissions estimates 2022 Available at https://www.gov.uk/government/collections/uk-local-authority-and-regional-greenhouse-gas-emissions-national-statistics [Accessed March 2025]

[146] Department for Energy Security and Net Zero and Department for Business Energy and Industry Strategy (2024) UK local authority greenhouse gas emissions estimates 2022 Available at https://www.gov.uk/government/collections/uk-local-authority-and-regional-greenhouse-gas-emissions-national-statistics [Accessed March 2025]

Thames Water in its Climate Change policy committed to achieving net-zero operational greenhouse gas emissions by 2030[147]. Although this aligns with the broader UK water industry's pledge to reach net-zero carbon emissions by the same year[148], Thames Water has indicated that it may not be able to reduce operational carbon emissions to Net Zero by 2030 as initially planned. Thames Water is committed to reducing greenhouse gas emissions and aligning with the Government's sixth carbon budget by cutting operational and capital emissions by 78% by 2035 (compared to 1990 levels). This will be achieved through the replacement of aging assets with low-carbon alternatives and the development of innovative solutions to minimize emissions from new investments[149].

Recent observations confirm that the UK is experiencing a warming trend, with significant increases in extreme maximum summer temperatures. Notably, the decade from 2014 to 2023 saw a substantial rise in top-ten warmest monthly, seasonal, and annual records across UK counties, while instances of top-ten coldest records were virtually absent[150].In 2022, the UK recorded its highest temperature ever, reaching 40.3°C at Coningsby, Lincolnshire, on 19 July[151].

Since 2011, six out of twelve months have seen new record high temperatures, including February 2019, July 2022, and May 2024. Conversely, no new record low temperatures have been recorded in recent years, underscoring the ongoing warming trend[152]. These patterns align with broader climatic changes observed globally, highlighting the increasing frequency and intensity of extreme heat events in the UK.

The Met Office provides publicly accessible climate data for UK regions, including Southern England, covering the 30-year period from 1981 to 2010. Specific climate summaries for Southern England during this period are detailed in **Table B-18**.

Table B-18: Southern England climate observations[153]

Climatic Condition	Climate Observation
Temperature	Mean annual temperatures vary from approximately 11.5°C in central London and coastal areas to around 9.5°C in higher inland regions. January is the coldest month, with daily minimum temperatures ranging from above 3°C in London and coastal locations to 0.5°C over elevated terrain. The warmest month is July, featuring daily mean maximum temperatures of 23.5°C, the highest recorded in the UK. Extreme maximum temperatures typically occur in July or August, often during heatwaves that persist for several days.
Precipitation	The South Downs and the higher parts of Dorset are the wettest areas in Southern England, receiving over 950mm of rain annually on average. In contrast, the Thames Valley, London, and the north Kent coast typically receive less than 650mm per year, with less than 550mm recorded around the Thames Estuary.

[147] Thames Water (2023) Climate change policy Available at https://www.thameswater.co.uk/media-library/home/about-us/governance/our-policies/sustainability/climate-change-policy.pdf [Accessed March 2025]

[148] Water UK (2020) Water industry plans to reach net zero carbon by 2030 Available at https://www.water.org.uk/news-views-publications/news/water-industry-plans-reach-net-zero-carbon-2030 [Accessed March 2025]

[149] Thames Water (2024) Thames Water Annual Report 2023/24 Available at https://www.thameswater.co.uk/media-library/home/about-us/investors/our-results/2024-reports/thames-water-annual-report-2023-24.pdf [Accessed March 2025]

[150] RMets (2024) Temperature extremes and records most affected by UK's changing climate State of the UK Climate 2023 Available at https://www.rmets.org/news/temperature-extremes-and-records-most-affected-uks-changing-climate [Accessed March 2025]

[151] Met Office (2022) Record high temperatures verified Available at https://www.metoffice.gov.uk/about-us/news-and-media/media-centre/weather-and-climate-news/2022/record-high-temperatures-verified [Accessed March 2025]

[152] Carbon Brief (2025) Met Office: A review of the UK's climate in 2024 Available at https://www.carbonbrief.org/met-office-a-review-of-the-uks-climate-in-2024/ [Accessed March 2025]

[153] Met Office (2016) Available at Southern England: climate https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/weather/regional-climates/southern-england_-climate-met-office.pdf [Accessed March 2025]

Climatic Condition	Climate Observation
	Precipitation is generally evenly distributed throughout the year in the region, although counties bordering the English Channel experience a more noticeable peak in autumn and early winter. In London and the Thames Valley, there are also notable summer rains due to showery, convective rainfall. The region is prone to extended periods of heavy rainfall, leading to widespread flooding, especially in winter and early spring. However, it can also experience dry spells, which put pressure on water supplies.
Sunshine	Southern England is home to some of the sunniest locations on the mainland UK. Coastal areas of Sussex, Hampshire, and the Isle of Wight are among the regions with the highest average sunshine hours. The annual sunshine duration along the coast can exceed 1,800 hours, while most of the region typically experiences between 1,550 and 1,600 hours, with a decrease towards the north.
Snowfall	In Southern England, the average number of days with snowfall is around 12-15 per year in the lower-lying areas. In contrast, higher ground areas such as the Chilterns, North Downs, and Weald experience an average of around 20 snow days annually. The areas closest to the English Channel are the least snow-prone, with fewer than 10 snow days. The number of days with snow cover follows a similar pattern, with most inland areas experiencing about five days per year, while higher ground, especially to the east and north, can have over 10 days of snow lying.
Wind	Southern England is one of the most sheltered regions of the UK. In most inland areas, gale-force winds (mean speed of 34 knots) occur typically once or twice a year. However, more exposed coastal locations experience around 10 days of gale-force winds annually.

Forecast future climate change is likely to influence processes within the hydrological cycle such as runoff and evapotranspiration. The impact of climate change on the water environment and water-related infrastructure is summarised in **Table B-19**.

Table B-19: Potential impact of climate change on the water environment and water-related infrastructure

Sector	Impact
Water Resources (i). water supply (ii). water demand	Reduction in yields, either in total or at certain times of the year. Increased evaporation losses from surface water stores Increased sediment and pollution runoff into watercourses. Increased risk of algal blooms and pollution in reservoirs. Increase in demands in summer months leading to increase in average and peak requirements. Increased pressure on treatment and distribution system. Increased requirements for agriculture.
Flood management	Increased riverine storm occurrence and flood risk. Improvements and higher specifications required for flood defences, urban drainage and rainwater disposal. Establishment of new flood defences which may alter river system
Water quality management	Lowered water quality in lowland rivers, with implications for instream ecosystems and water abstractions.

Sector	Impact
	Increases or decreases in river levels and/or flows results in changes to water quality parameters e.g. temperature, salinity, dissolved oxygen Altered potential for polluting incidents. Increased potential for combined sewer overflows due to an increase in extreme storm occurrences.
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.

Drought options could influence CO_2 emissions through additional pumping and treatment requirements. The DP is a response plan that sets out to address the supply of water during times of drought, which may become more prevalent and intense due to the effects of climate change, although not necessarily over the next five years. The use of drought permits or orders is to ensure continuity of supply is maintained under severe drought conditions e.g. 1:200 or 1:500 and also under climate change, however, it is recognised that it is preferable to avoid the use of potentially damaging drought options. Thames Water seeks to address this issue through developing greater resilience to more severe droughts through the statutory Water Resources Management Planning process and through this process we are planning to develop resilience to 1:200 and 1:500 year droughts.

Adaptation to Climate Change

The third UK Climate Change Risk Assessment (CCRA3) assesses the risks and opportunities from climate change for the UK and provides national summaries for each of the devolved nations[154]. For England, it is identified that risks from extreme heat are greater than elsewhere in the UK and is a particular risk for the south east of England. A summary of the risk identified which have a high future magnitude score and require action now to address them include, but are not limited to:

- The impacts of climate change on the natural environment, including terrestrial, freshwater, coastal and marine species, forests and agriculture.
- An increase in the range, quantities and consequences of pests, pathogens and invasive species, negatively affecting terrestrial, freshwater and marine priority habitats species, forestry and agriculture.
- The risk of climate change impacts, especially more frequent flooding and coastal erosion, causing damage to infrastructure services, including energy, transport, water and Information and Communication Technologies (ICT).
- A reduction in public water supplies due to increasing periods of water scarcity.

The Met Office UK Climate Projections (UKCP) were updated for the first time since 2009 in December 2018 (UKCP18)[155]. The UKCP18 are largely the same as the previous projections where all areas of the UK are projected to be warmer, particularly during summer months. Rainfall is projected to vary seasonally and at a regional scale, however the UK is projected to have wetter winters and drier summers.

The projected changes in temperature and precipitation for the south east of England by the 2050s (2040-2069), under the RCP8.5 scenario (high emissions scenario) are detailed in **Table B-20**. The

[154] UK CCRA (2021) Evidence for the third UK Climate Change Risk Assessment (CCRA3) Available at https://www.ukclimaterisk.org/wp-content/uploads/2021/06/CCRA-Evidence-Report-England-Summary-Final.pdf [Accessed March 2025]

[155] Met Office (2018) UK Climate Projections (UKCP) Available at https://www.metoffice.gov.uk/research/approach/collaboration/ukcp [Accessed March 2025]

1981-2010 baseline period and the central estimate, representing 'as likely as not' probability of change (50th percentile), was used for the following projections.

Table B-20: Future climate projects by the 2050s under the RCP8.5 scenario

Climatic Factor	Climate Projections
Temperature	Annual mean temperatures are projected to increase by 2.0°C. Summer temperatures are projected to see the largest increase by 2.6°C and winter temperatures by 1.7°C. Mean maximum summer temperatures are projected to increase by 2.9°C.
Precipitation	Annual mean precipitation is projected to decrease by 1.1%. Seasonal variability is projected with a 22.9% decrease in precipitation during summer months and an increase of 11.5% during winter months.

B.6.2 Future Baseline

In 2019, the UK revised its emissions reduction target, committing to a 100% reduction in greenhouse gas emissions by 2050 relative to 1990 levels[156], an update from the previous target of an 80% reduction as set out in the Climate Change Act 2008. So far, the UK has met all its carbon budget targets. In 2021, the government introduced the Net Zero Strategy[157] outlining policies and proposals to decarbonise all sectors in pursuit of the 2050 net zero goal. Achieving this target will require building emissions to be reduced to near zero and industrial processes to adapt, both of which are crucial for Thames Water's operations.

The UK is currently meeting all statutory air quality limits, except for NO_2[158], where roadside NO_2 concentrations in particular have been identified as being above legal limits. In response, the government has created an air quality plan for NO_2[159], setting out how it aims to meet the ambitious and legally binding targets set out for NOx in the shortest time possible. The wider Clean Air Strategy[160] also sets out plans for four other damaging air pollutants.

Climate change is a key theme with regards to biodiversity[161] and is likely to have an impact on biodiversity in the future by exacerbating pressures such as changes to the timing of seasonal activity and water scarcity. The UK Climate Change Risk Assessment (CCRA) considered several risks associated with biodiversity, health and well-being and the economy among others[162].

More local targets for carbon emissions have been set by various local authorities within the Thames Water region, notably the Mayor of London's 2050 target for London to be a zero carbon city. The Mayor of London's 'Zero carbon London' plan[163] sets out how London will reach net zero and reduce its emissions by 60% (compared to 1990 levels) by 2030 and by almost 80% by 2040.

[156] The Climate Change Act 2008 (2050 Target Amendment) Order 2019

[157] DESNZ & BEIS (2021) Net Zero Strategy: Build Back Greener. Available at https://www.gov.uk/government/publications/net-zero-strategy [Accessed March 2025]

[158] Nitrogen Dioxide

[159] Defra and DfT (2017) Air quality plan for nitrogen dioxide (NO_2) in UK (2017). Available at https://www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017 [Accessed March 2025]

[160] Defra (2019) Clean Air Strategy 2019. Available at https://www.gov.uk/government/publications/clean-air-strategy-2019 [Accessed March 2025]

[161] Natural Environment White Paper The Natural Choice: Securing the Value of Nature (2011); DEFRA Biodiversity 2020: A strategy of wildlife and ecosystem services (2011).

[162] HM Government (2022) UK Climate Change Risk Assessment 2022 Available at https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-2022? [Accessed March 2025]

[163] Mayor of London (2018) Zero carbon London: A 1.5°C compatible plan Available at https://www.london.gov.uk/sites/default/files/1.5_action_plan_amended.pdf [Accessed March 2025]

The 2018 UK Climate Projections (UKCP18) estimate that summers in the Thames River Basin area are likely, on average, to be hotter and drier which could affect the frequency and severity of drought events.

B.6.3 Key Issues

The key sustainability issue arising from the baseline assessment for air and climate is:

- The need to reduce air pollutant and greenhouse emissions and limit air emissions to comply with air quality standards.
- The need to mitigate against climate change through the reduction of 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, sustainable water resource management, water use efficiencies, specific aspects of natural ecosystems (e.g. connectivity) as well as accommodating potential opportunities afforded by climate change.

B.7 ARCHAEOLOGY AND CULTURAL HERITAGE

B.7.1 Baseline

Implementation of drought options could impact the character of historic landscapes and affect the significance of heritage assets that are linked to the water environment. Archaeological remains are particularly sensitive to changes in water quality, water levels (for example waterlogged deposits), pollution and land use practices. Heritage assets represent a finite and irreplaceable resource and must be conserved in a manner that reflects their significance and sensitivity to environmental change[164].

The Thames catchment contains a rich and layered cultural heritage, encompassing both designated assets and non-designated assets, including locally valued sites, historic landscape character, and buried archaeology. The River Thames itself is a defining cultural feature, historically shaping settlement, trade, industry, and recreation. Its role in the development of historic landscapes and water-dependent heritage assets, such as wharves, and water gardens, makes it particularly sensitive to hydrological change[165]. Heritage designations and assets for the Thames River Basin are shown in two figures, **Figure B-8**, **Figure B-9 and Figure B-10,** due to their density. The Thames River Basin includes internationally recognised World Heritage Sites[166] (for example, the Tower of London, Blenheim Palace, the Royal Botanic Gardens at Kew, the Palace of Westminster, Maritime Greenwich and Stonehenge, Avebury and Associated Sites).

Historic England manages the National Heritage List for England (NHLE) which is the official register of all nationally protected historic sites and buildings in England[167]. Nationally important archaeological sites are statutorily protected as Scheduled Monuments (SMs)[168]. As of 2023, there were 19,954 entries in the Schedule for the UK[169], with around 1,210 SMs located within the Thames Water region. Registered Parks and Gardens form a key part of England's nationally significant cultural heritage. As of 2025, there were 1,707 designated sites across England, including approximately 327 within the

[164] Historic England (2020) GPA 4: Enabling Development and Heritage Assets. Swindon. Historic England Available at https://historicengland.org.uk/images-books/publications/gpa4-enabling-development-heritage-assets/ [Accessed October 2025]

[165] Greater London Authority (2019) The Case for the River Thames Available at the_case_for_a_river_thames_cultural_vision_2019.pdf [Accessed October 2025]

[166] 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

[167] Historic England (2025) The National Heritage List for England Available at https://historicengland.org.uk/ [Accessed October 2025]

[168] Nationally important archaeological sites designated under the Ancient Monuments and Archaeological Areas Act, 1979, Available at https://www.legislation.gov.uk/ukpga/1979/46 [Accessed March 2025]

[169] Historic England (2024) Designated Assets, Protected Areas and the Built Environment Available at https://historicengland.org.uk/research/heritage-counts/indicator-data/assets/ [Accessed March 2025]

Thames Management Catchment. Their design, planting schemes, and water features are often sensitive to drought-related pressures.

Add An overview of all cultural heritage sites in the Thames Management Catchment area is provided in **Table B-21**.

Table B-21: Heritage assets in Thames Management Catchment area

Asset	Thames Water Region
World Heritage Site	6
Scheduled Monuments	1210
Listed Buildings	46,930
Registered Historic Parks and Gardens	327
Conservation Areas	1404
Registered Historic Battlefields	4
Protected Historic Wrecks	0

Conservation Areas are usually designated by the local planning authority, or Historic England can designate them in London (in consultation with London Boroughs). They are designated for their special architectural and historic interest. Conservation Areas can include historic town and city centres, fishing and mining villages, 18th and 19th century suburbs, model housing estates, country houses set in historic parks and/or historic transport links and their environment. There are over 8,000 conservation areas in England. Individual local authorities provide details on specific conservation areas.

Historic England releases an annual register that provides an overview of England's most valued historic sites, highlighting those most at risk of being lost due to neglect, deterioration, or unsuitable development. There were 4,880 designated assets on the Heritage at Risk (HAR) register in 2024, including; 599 sites in London, 451 sites in the South East, 405 sites in East of England and 1,337 sites in the South West[170].

Historic Environment Record (HER) databases linked to a Geographic Information System (GIS) are held by County Councils, District Councils or Unitary Authorities. They represent unique repositories of, and signposts to, information relating to landscapes, buildings, sites and artefacts spanning from the Palaeolithic period to modern times[171]. Presenting this wealth of information for the Thames Water supply area would be difficult, however, it can be interrogated where the DP options have the potential to affect such assets.

In relation to unknown assets, there are a number of floodplains within the Thames Water supply region which are either known or suspected to be of high importance for waterlogged archaeology. Such evidence includes both material (wooden artefacts and structures such as trackways) and evidence of past environmental change from the deposits themselves. The waterlogged conditions that preserve these remains may be rain-fed or groundwater fed. If the latter, then clearly abstraction levels can be a critical factor in maintaining conditions in which preservation of the remains is viable within the same location or impacted reach. In addition, there are waterlogged deposits that are specifically associated with chalk, such as springs and their intimately associated wetlands which again can contain important archaeological information, especially palaeo-environmental evidence. Approximate locations of areas important for palaeo-environmental deposits were previously identified according to a spreadsheet supplied by English Heritage (now Historic England)[172].

[170] Historic England (2024) Heritage at Risk Indicator Data Available at https://historicengland.org.uk/research/heritage-counts/indicator-data/har/#e130b990 [Accessed March 2025]

[171] Historic England (2015) Historic Environment Records (HERs) Available at https://historicengland.org.uk/advice/technical-advice/information-management/hers/ [Accessed October 2025]

[172] English Heritage (2011) National Monument Record Wetland Heritage List Data 111006.

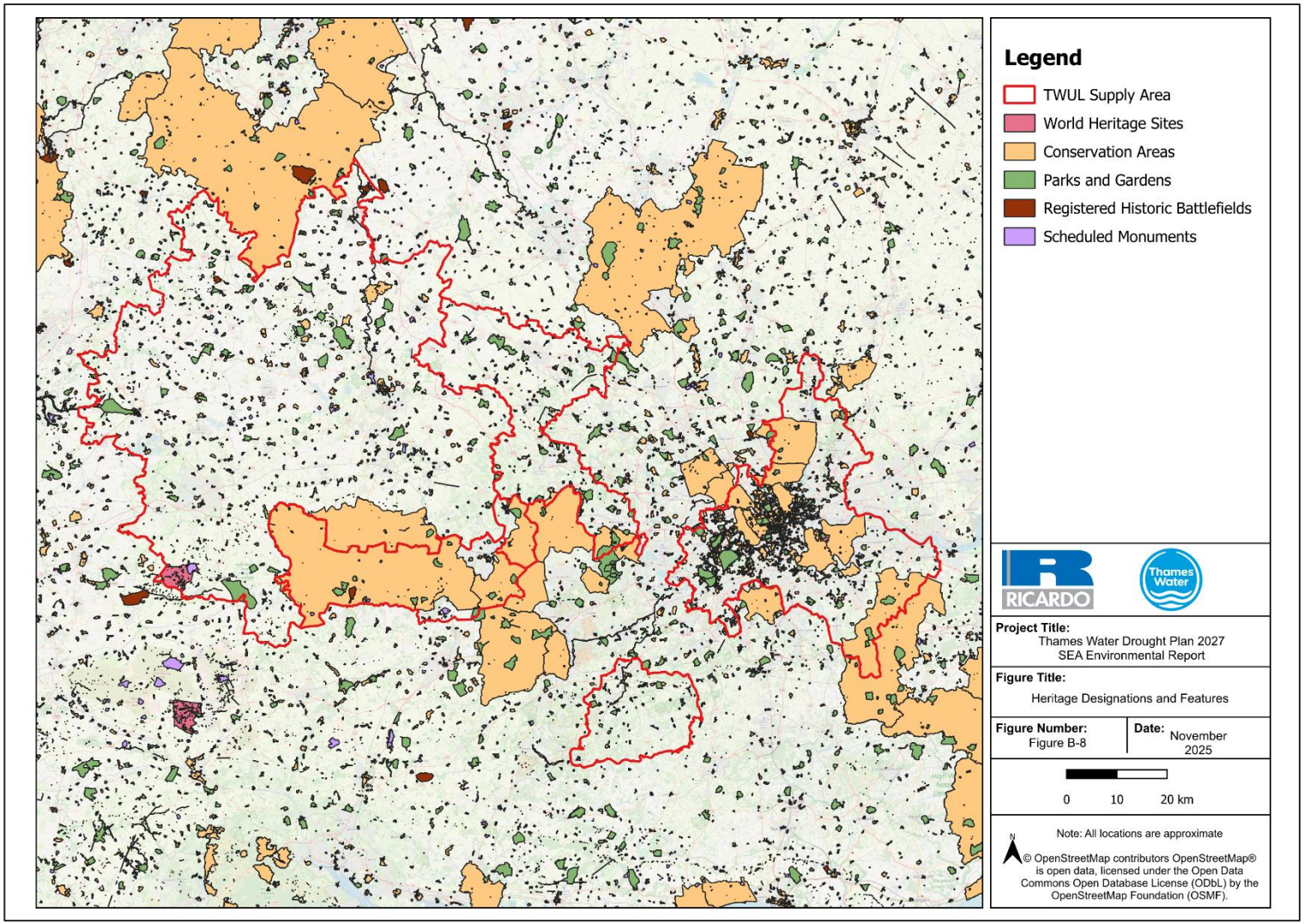

Figure B-8: Heritage Designations and Features in SEA study area

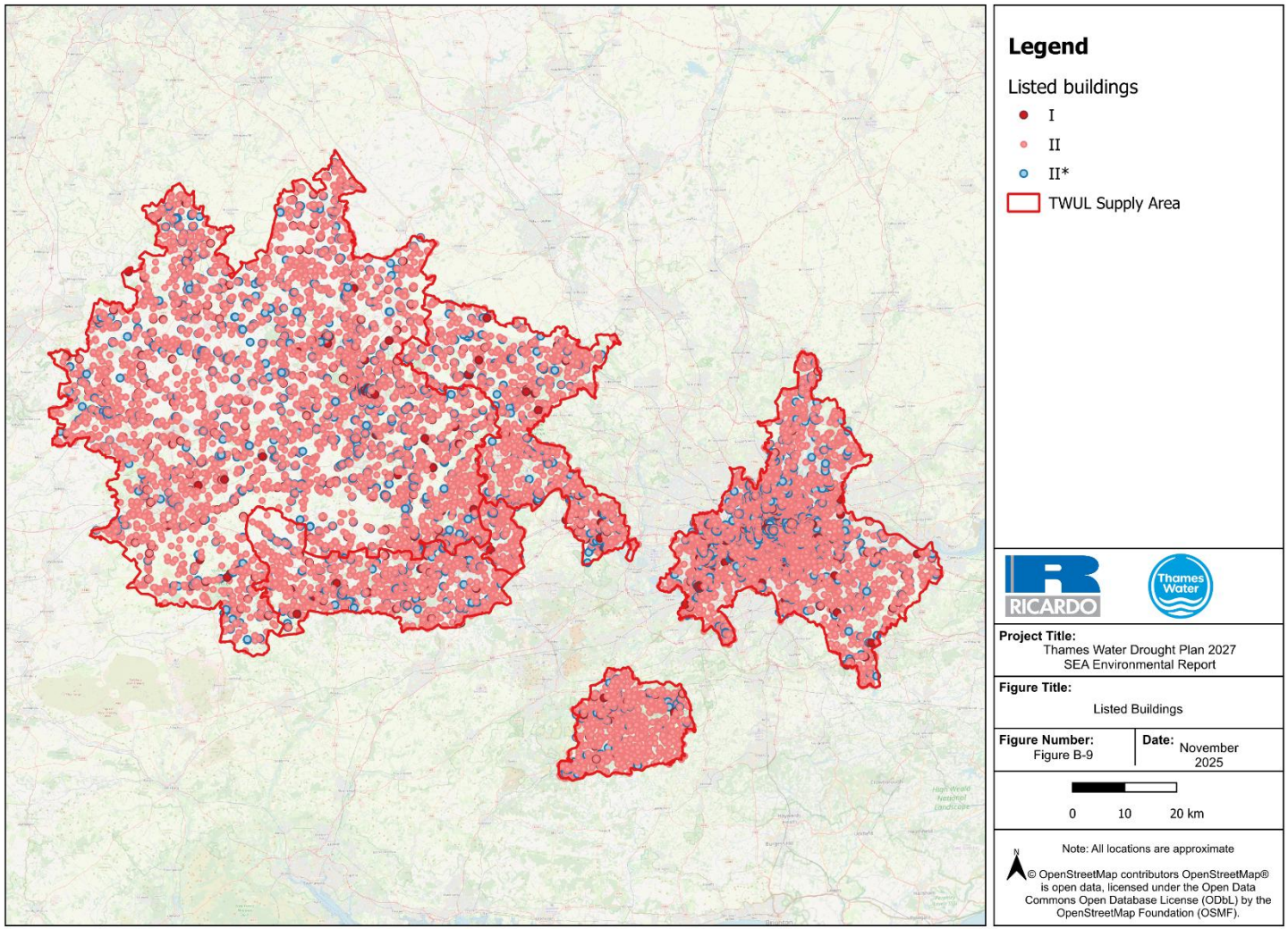

Figure B-9: Listed Buildings

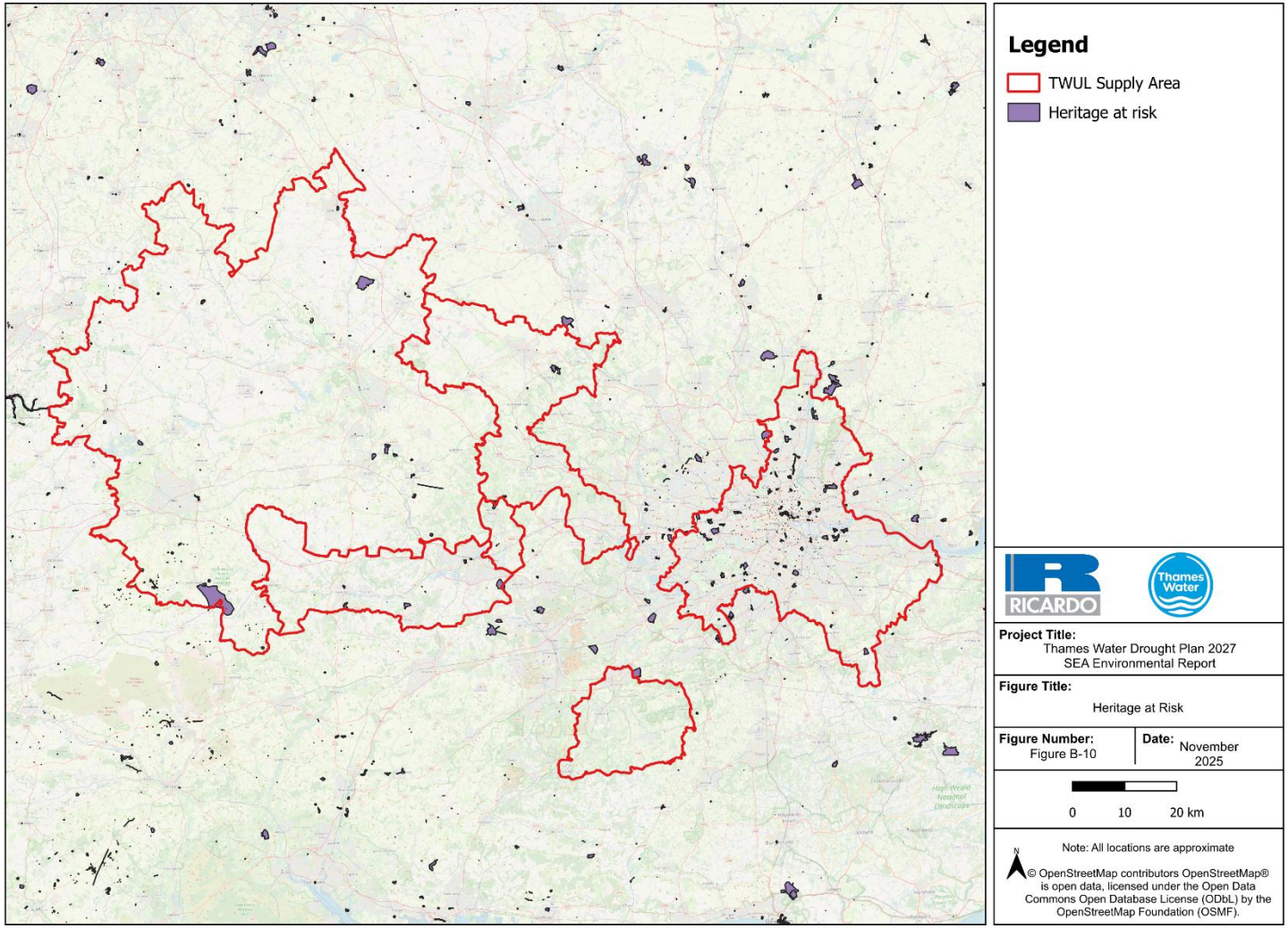

Figure B-10: Heritage at Risk

B.7.2 Future Baseline

The core planning principles outlined in the NPPF include the protection of heritage assets, with the aim to "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"[173]. Recent and ongoing national economic challenges may hinder efforts to conserve and repair heritage assets, potentially slowing their removal from the Heritage at Risk Register. Climate change could have variable impacts on heritage assets in the future. In the Thames catchment, indirect climate change effects, such as shifts in land use, can alter the setting and context of heritage assets[174]. Adaptation measures like abstraction infrastructure, or landscape modifications may also pose risks to heritage assets and landscape character if not sensitively designed and implemented. 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[175,176].

B.7.3 Key Issues

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

- The need to conserve and enhance the historic and cultural significance (including any contribution made by the setting) of heritage assets, particularly where they are sensitive to the water environment or may be affected by DP-related development.
- The need to conserve and enhance the World Heritage Sites within the DP area.
- The need to protect water-dependent heritage sites during drought conditions, including important wetland areas with potential for paleoenvironmental deposits.

[173] Ministry of Housing, Communities and Local Government (2024) National Planning Policy Framework Available at https://www.gov.uk/government/publications/national-planning-policy-framework--2 [Accessed March 2025]
[174] Historic England (2024) Climate Change Risks and Hazards Available at https://historicengland.org.uk/advice/climate-change/risks-and-hazards/#4f197f31 [Accessed October 2025]
[175] Historic England, (2022) Climate change adaptation report Available at https://historicengland.org.uk/research/results/reports/8614/ClimateChangeAdaptationReport [Accessed March 2025]
[176] Historic England, (2022) Researching Heritage, Climate Change and Environment Available at https://historicengland.org.uk/research/current/discover-and-understand/heritage-climate-change-environment/ [Accessed March 2025]

B.8 LANDSCAPE AND VISUAL AMENITY

B.8.1 Baseline

The implementation of DP measures has the potential to influence landscape and visual amenity, beyond the impacts that would occur as a result of the drought alone. According to the NPPF, planning policies and decisions should support and improve the natural and local environment, including the preservation and enhancement of valued landscapes[177]. Furthermore, efforts should be directed toward advancing the statutory purposes of National Landscape designations when undertaking operations that may affect the natural beauty or character of the landscape, both within designated areas and in adjacent settings where impacts may arise[178]. Landscape character is defined a 'a distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse'. The unique interplay of geology, landforms, soils, vegetation, land use, field patterns, and human settlements shapes the character of a landscape. This character, in turn, distinguishes different areas and contributes to their distinct 'sense of place.'[179].

Some landscapes are special because they have a particular amenity value, such as those designated as National Landscapes, formerly known as 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 landscape sites (including National Landscapes, National Parks and Green Belt) and Natural England National Character Areas (NCAs) are shown in **Figure B-11** for the Thames River Basin**.**

Nationally Designated Sites

National landscapes are places protected for the benefit of the country, cherished by local communities, and celebrated nationwide. While designated at the national level, they are managed locally by expert teams to ensure their preservation and enhancement[180].

There are five National Landscapes within, or partially within, the River Thames management catchment. This is summarised in **Table B-22**.

Table B-22: National Landscapes within Thames WRZs

Name of Site and Type	Water Resource Zone and Distance	Region(s)	Key Characteristics
Chilterns	SWOX, SWA, Henley, Kennet Valley (National Landscape within each WRZ)	South East, London and East of England	Part of the Chalk ridge extending from Dorset to Yorkshire. Heavily wooded character. Important diversity of habitats from chalk grassland to beech woodland.

[177] Ministry of Housing, Communities and Local Government (2024) National Planning Policy Framework Available at https://www.gov.uk/government/publications/national-planning-policy-framework--2 [Accessed March 2025]

[178] Levelling-up and Regeneration Act 2023 Available at https://www.legislation.gov.uk/ukpga/2023/55/section/245 [Accessed October 2025]

[179] Natural England (2006) Landscape: beyond the view available at https://publications.naturalengland.org.uk/publication/2705143 [Accessed March 2025]

[180] National Landscapes Association (2025) National Landscapes Available at https://national-landscapes.org.uk/national-landscapes [Accessed March 2025]

Name of Site and Type	Water Resource Zone and Distance	Region(s)	Key Characteristics
			Major recreation resource – used for scenic drives, walking and riding.
Cotswolds	SWOX (National Landscape within WRZ)	London, South East, West Midlands, South West	Jurassic limestone creating distinctive character. Nationally important for limestone grassland and ancient beechwood. Recreation resource – includes the Cotswolds National Trail.
Kent Downs	London (National Landscape within WRZ).	London and South East	Traversed by three river valleys – Darent, Medway and Stour. Chalk ridge – unimproved chalk grassland is an important habitat. Orchards, hop gardens, horticulture & arable farmland. River valleys, ancient lanes and wooded foreground of upland ridges.
North Wessex Downs	SWOX, Kennet Valley (National Landscape within WRZ)	London, South East and South West	Includes the uplands of Marlborough, Berkshire and North Hampshire Downs. Richly farmed landscapes including Pewsey Meadows. Includes the Neolithic stone circle at Avebury. Recreation resource – at Avebury, also Ridgeway National Trail and Kennet and Avon Canal.
Surrey Hills	London and Guildford (National Landscape within WRZ)	South East and London	Links together a chain of upland landscapes. Chalk landscape – chalk landscape and unimproved heath, deciduous woodland. Recreation resource – Box Hill and Devil's Punch Bowl, Greensand Way and North Downs National Trail.

National Parks are designated areas safeguarded for their scenic landscapes, diverse wildlife, and rich cultural heritage. The South Downs National Park includes a portion of the southern Thames River Basin within the Guildford WRZ. The water supply for the Guildford WRZ primarily relies on the upper River Wey, with much of the River Wey valley located within the Surrey Hills National Landscape.

The key characteristics of the Green Belt are its openness and permanence. The primary objective of Green Belt is to prevent urban sprawl by ensuring land remains permanently open. It serves to restrict the uncontrolled expansion of large urban areas, prevent neighbouring towns from merging, protect the countryside from encroachment, preserve the unique setting and character of historic towns, and support urban regeneration by promoting the reuse of derelict and other urban land[181]. Within the Thames Water supply area, the Green Belt is present in all WRZs except for the Kennet Valley WRZ.

Natural England National Character Areas

[181] Ministry of Housing, Communities and Local Government (2024) National Planning Policy Framework Available at https://www.gov.uk/government/publications/national-planning-policy-framework--2 [Accessed March 2025]

Natural England National Character Areas take account of landscape features[182] (also referred to in the Biodiversity, Flora and Fauna topic). These are shown geographically in **Figure B-11** and **Table B-23** summarises the key features.

[182] Natural England - Natural Character Area Profiles. Available at https://nationalcharacterareas.co.uk [Accessed March 2025]

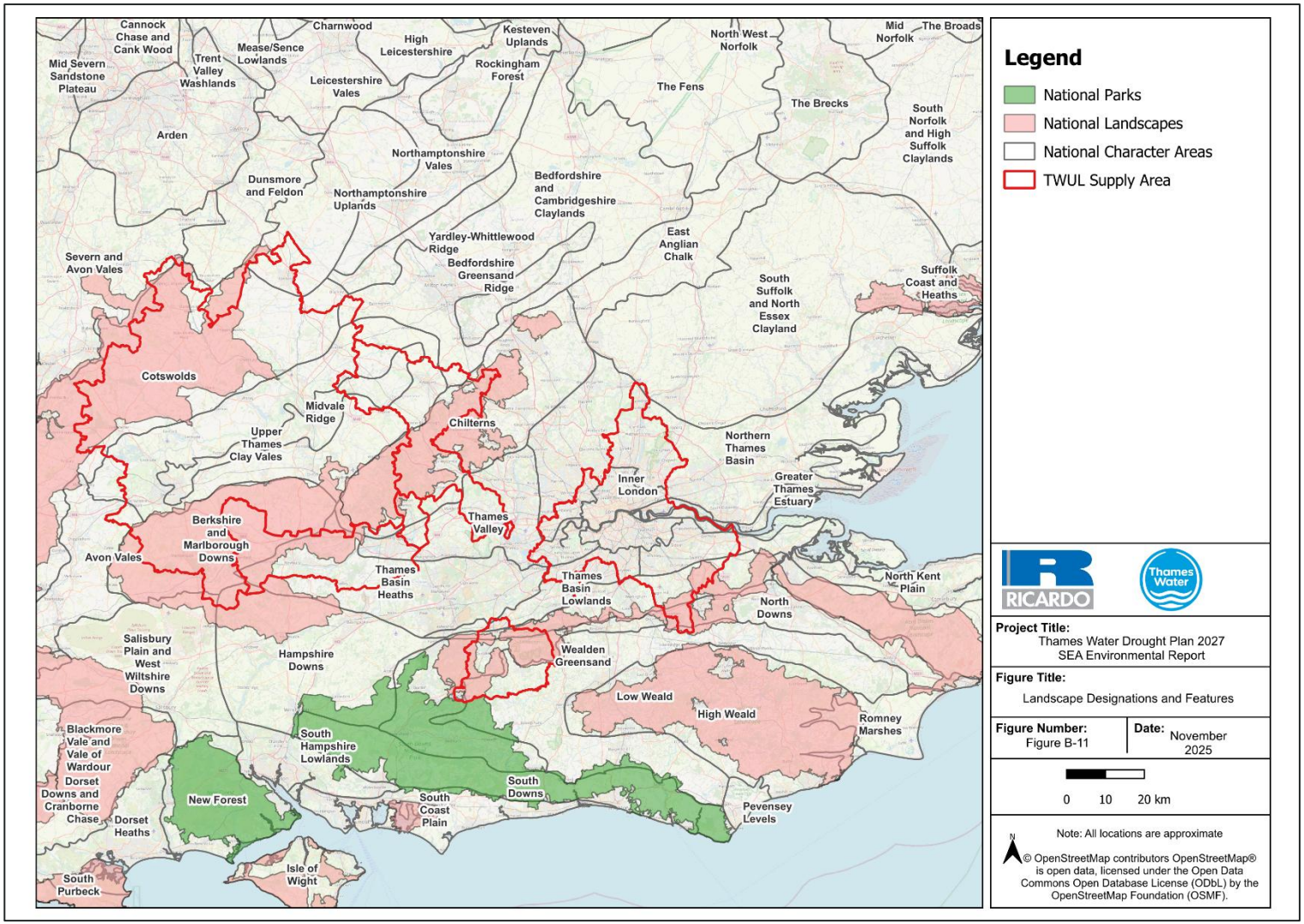

Figure B-11: Landscape Designations and Features in SEA study area

Table B-23: Natural England National Character Areas (NCAs)

National Character Area	Key Messages
Chilterns	• The Chilterns NCA is a predominantly wooded and farmed landscape with an underlay of chalk bedrock rising from the London Basin and offering wide views over adjacent vales. • River Thames breaches escarpment to the south at Goring Gap, flowing past riverside towns such as Henley. • The surrounding countryside is an area utilised for agriculture interspersed with woodland and hedged boundaries. • Parts of Chilterns area furthest from London are recognised as special and attractive, falling within the Chilterns National Landscape. • Major urban fringe and growth areas such as Luton and Hemel Hempstead are located within the Chilterns NCA, although outside of these National Landscape.
South Suffolk and North Essex Claylands	• The NCA stretches from Bury St Edmunds to Ipswich following the line of the A14 through Gipping Valley. The landscape is gently undulating with a chalky boulder clay plateau as a result of multiple small-scale river valleys dissecting the plateau. • The area is one dominated by its ancient landscape of wooded arable countryside, with a noticeable feeling of enclosure throughout and a complex network of hedgerows, meadows and parklands extending eastwards. • The soils within the area are moderately fertile, chalky clay soils which provide vegetation with a calcareous character. • Irregular field patterns can still be seen despite enlargements in the second half of the 20th century.
Northern Thames Basin	• Area extends from Hertfordshire to the west to Essex coast in the east and include notable areas such as the suburbs of North London, St. Albans and Colchester. • Arable agriculture is a large part of the industry in the area, although despite this, soil quality ranges from good to poor, with the London clay often waterlogged in winter and cracking in summer. • The area is rich in geodiversity, archaeology and history with landscapes spanning from the Hertfordshire plateau to the more open arable sections of the Essex heathlands. • Rapid urban expansion since the mid-19th century has led to an increase in housing developments, schools and amenities for local populations, leading to a detrimental effect on tranquillity.
North Kent Plain	• The North Kent Plain is a strip of open, low and gently undulating land between the Thames Estuary to the north and the chalk of the Kent Downs to the south. • It is a highly productive agricultural area with good quality soils used predominately for arable farming. • Ancient woodland surrounds Blean, with additional woodland further west. Despite this, the landscape is mostly open and expansive, leading to the area being called as the “Garden of England”.
North Downs	• Forming a chain of chalk hills, the North Downs NCA extends from Hogs Back in Surrey to the famous White Cliffs of Dover. • The settlements in the area consist of traditional small villages and farms while twisting sunken lanes cut across the scarp and are a feature of much of the dip slope. • The beauty of the area is reflected by its location within the Kent Downs and Surrey Hills National Landscape.
Thames Basin Lowlands	• The Thames Basin Lowlands is a low lying plain situated within the London Basin between the suburbs of South Norwood and Hale, located on the Surrey/Hampshire border. • Overall the landscape is largely flat, with small sections of gently undulating land.

National Character Area	Key Messages
	• The underlying geology consists mostly of London Clay, with small outcrops of Bracklesham and Barton Group sand, silt and clay between Esher and Cobham. • Part of the North Downs Chalk bedrock, fringed with Thanet Formation and Lambeth Group sediments, underlies Croydon and Sutton.
High Weald	• High Weald NCA is covered by ancient countryside and cited as one of the best surviving medieval landscapes in northern Europe. • It encompasses the ridged and faulted sandstone core of the Kent and Sussex Weald and comprises a mixture of fields, small woodlands and farmsteads with extensive connections to these areas through historic tracks and paths. • The majority of the area (78%) is covered by the High Weald National Landscape with prominent medieval patterns of small pasture fields enclosed by thick hedgerows and shaws (narrow woodlands) remaining fundamental to the character of the landscape.
Low Weald	• A broad area of low lying clay which wraps around the northern, western and southern edges of the High Weald. • Mostly agricultural land able to support pastoral farming as a result of the heavy clay soils, although lighter soils can be found to the east. • The landscape is predominantly covered by densely wooded areas with a large amount of ancient woodland. • Approximately 9% of the NCA is situated within the adjacent designated Surrey Hills, Kent Downs and High Weald National Landscape with 23% of the land categorised as greenbelt.
Wealden Greensand	• Around 25% of the area contains extensive belts of woodland, including ancient woods and more recent conifer plantations. Area also features open areas of heath on acidic soils, river valleys and mixed farming with areas of fruit growing. • Over half of area covered by South Downs National Park, Kent Downs National Landscape and Surrey Hills National Landscape and serves as a significant place of interest for landscape, geology and biodiversity. • Underlying geology has shaped the scarp-and-dip slope topography with clear links apparent between vernacular architecture, industry and local geology. • The area accommodates a mix of internationally and nationally designated sites related to biodiversity, including 3 SPAs 2 RAMSAR sites and 8 SACs.
Thames Valley	• Majority of the landscape is urban with low lying land situated within a wedge shaped area. It widens from Reading, including Slough, Windsor, the Colne Valley and the southwest London Fringes. • Hydrological features are the most prominent within the area and include the Thames and its tributaries, the Grand Union Canal and the reservoirs which form the South- West London Waterbodies SPA and Ramsar site. These features are vital for providing water supply services to London and surrounding suburbs whilst also being crucial for wildlife and recreation. • Due to the flood risk, flows and water levels in the River Thames are managed upstream of Teddington. Both flood defence and water quality improvement techniques enhance opportunities for biodiversity and recreation throughout the NCA.
Berkshire and Marlborough Downs	• A vast area containing arable fields stretching across rolling Chalk hills with scattered settlements. The escarpment provides wide views of the Berkshire and Marlborough Downs with visible landmarks including chalk-cut horse figures, beech clumps and ancient monuments. • Avebury stone circle is a popular visitor destination and part of a World Heritage Site, with numerous other Scheduled Monuments and heritage features across the landscape, although Heritage features are at risk from damage by cultivation and animal burrowing.

National Character Area	Key Messages
Upper Thames Clay Vales	• An area characterised by its open, gently undulating lowland farmland on mostly Jurassic and Cretaceous clays. • The World Heritage site of Blenheim Palace falls within the NCA boundaries, coupled with 5000 ha of the North Wessex Downs National Landscape and smaller sections of the Chilterns and Cotswolds National Landscape. • The landscape is contrasting, with enclosed pastures of the clay lands with wet valleys, mixed farming, hedge trees and field trees opposed by more open, arable lands.
Midvale Ridge	• A band of low lying limestone hills stretch from east to west across the area from the Vale of Aylesbury to Swindon. It is surrounded by the flat lands of the Oxfordshire clay vales, which allows for extensive views across the countryside. • Swindon and Oxford are the main towns within the area; outside of this the remaining settlements are mostly small nucleated villages along the top of the ridge and the springline. • The majority of the area is agricultural with a mixed arable/ pastoral farming landscape, cereals being the most important arable crop. • The soil types are made up of heavy rendzinas, stagnogleys and lighter sandy brown earths with small patches of sandy soils. • It is an area of significant importance for its geological sites, yielding fossils of international importance.
Cotswolds	• An area known for its predominantly oolitic Jurassic Limestone belt that stretches from the Dorset coast to Lincolnshire. The limestone within the area has been widely used in buildings and walls. • The pattern of the landscape is steep scarp crowned by a high, open wold. The scarp provides a backdrop to the major settlements of Cheltenham, Gloucester, Stroud and Bath and provides expansive views across the Severn and Avon Vales to the west. Smaller settlements are located at the scarp foot linked by a network of roads and public rights of way. •
Avon Vale	• A landscape of mixed, largely pastoral agriculture and small limestone built towns. Over 80% of the area is used for agricultural purposes and less than 10% for urban, although development has occurred rapidly from the late 20th century onwards. • It is an undulating and low lying area cut by the River Avon (Bristol) and surrounded to the west, south and east by higher land. • Smaller settlements and farmsteads are clustered along streams and lesser rivers, linked by narrow winding lanes. Ancient patterns of flood meadows and drainage ditches dominate these valley floors, with wet grasslands and woodlands.
Salisbury Plain and West Wiltshire Downs	• An area dominated by its gently rolling chalk downland which forms part of the sweep of Cretaceous Chalk spanning the Dorset coast and across the Chilterns to north of the wash. • The area is sparsely populated with a main focus on agriculture. There are few settlements, leading to a vast, open landscape and a strong sense of remoteness • The plain is predominantly covered by its chalk grassland, one of the largest remaining areas of calcareous grassland in north western Europe • The area is well protected with SPA, SAC and SSSI designations due to its rich populations of stone curlew, hen harrier and rare bumblebee species
Northampton-shire Uplands	• Rounded undulating hills with many long, low ridgelines. Great variety of landform with distinctive local features, such as Hemplow Hills. • Dominant Jurassic scarp slope of limestone and Lias clay hills capped locally with ironstone-bearing Marlstone and Northampton Sands. Glacial boulder clay covers the northern and eastern areas, with sands and gravels along river valleys.

National Character Area	Key Messages
	• The Upper Nene Valley divides the gently undulating Northamptonshire Heights to the north from the hillier Cherwell/Ouse plateau (the 'Ironstone Wolds') to the south and has been exploited for sand and gravel. • Rivers rise and flow outwards in all directions, including the rivers Cherwell, Avon, Welland, Tove, Ouse, Nene and Ise, and the area forms the main watershed of Middle England. • Sparse woodland cover, but with scattered, visually prominent, small, broadleaved woods, copses and coverts, particularly on higher ground. • Mixed farming dominates with open arable contrasting with permanent pasture. • Typical 'planned countryside' with largely rectangular, enclosed field patterns surrounded by distinctive, high, often A-shaped hedgerows of predominantly hawthorn and blackthorn, with many mature hedgerow trees, mostly ash and oak. Some ironstone and limestone walls in places and some localised areas of early irregular enclosure.
Bedfordshire and Cambridgeshire Claylands	• A landscape which is broad and gently undulating, with a lowland plateau dissected by shallow river valleys • This is contrasted by the Bedfordshire Greensand Ridge, a narrow and elevated outcrop of Greensand with acidic soils and grassland, heathland and woodland habitats. • The Forest of Marston Vale is located within the NCA, as well as a small section of the Chilterns National Landscape. The area is visible from the elevated ground of the Yardley Whittlewood Ridge, Bedfordshire Greensand Ridge, East Anglian Chalk and Chilterns NCAs • Semi natural habitats supporting an array of rare species can be found within the predominantly arable and commercially farmed landscape • The River Great Ouse and its tributaries run through the site and are visible across the landscape.
Greater Thames Estuary	• A largely remote and tranquil landscape between the North Sea and rising ground inland, consisting of shallow creeks, drowned estuaries, mudflats and broad tracts of tidal salt marsh. • Despite proximity to London, the NCA only has a few major settlements and small villages towards the higher ground. It contains some of the most scarcely populated sections of the English coast and is vastly different to the densely populated urban areas towards London. • Sea defences protect large areas of reclaimed grazing marsh and its associated ancient fleet and ditch systems, and productive arable farmland. Historic military landmarks are characteristic features of the coastal landscape.
Hampshire Downs	• Part of the central southern England belt of chalk, the Hampshire Downs rises 297m in the north-west and is located on the Hampshire-Wiltshire border. • A steep scarp to the north delineates the Downs. The area overlooks the Thames Basin the Weald to the east. It is characterised by its elevated, open and rolling landscape covered by large arable fields with low hedgerows on thin chalk soils, scattered woodland blocks and shelterbelts. • The Chalk is a large and important aquifer; hence groundwater protection and source inerrability designations cover most of the area. Catchment sensitive farming to control pollution, run-off and soil erosion is a vital activity.vThe aquifer feeds a number of small streams flowing north and east, although the dominant catchments are those of the rivers Test and Itchen, which flow in straight sided with relatively deeply incised valleys across most of the area. • The Itchen is a SAC and the Test a designated SSSI. These rivers, with the watermeadows, peat soils, mires and fens of their flood plains, are the most important habitats of the area. • The valleys are home to the main settlements, the local road system and important economic activities such as watercress growing and fly fishing.

National Character Area	Key Messages
South Wessex Downs	• The area is characterised by its "whale-backed" spine of chalk and stretches from the Hampshire downs in the west to the coastal cliffs of Beachy Head in East Sussex. • Its location falls largely within the South Downs National Park. 8% of the area is classified as urban, with the coastal conurbation of Brighton and Hove situated in the east of the NCA • The landscape is diverse and complex with significant variation from physical, historical and economic influences Much of the landscape today has been formed and maintained by human activities, most notably agriculture and forestry

Tranquillity is associated with the degree to which places and ecosystems deliver a state of quiet, calm, peace and well-being and, as a landscape asset, is highly valued and contributes to both landscape value and identity. 'Tranquillity' can be defined as the quality of calm that is experienced by people in places full of the sights and sounds of nature. The Campaign for Rural England (CPRE) developed tranquillity mapping for England to identify areas that are either disturbed or undisturbed by urban areas (towns and cities), traffic (road, rail and airports), power stations, pylons, power lines and open-cast mines[183].

Implementation of drought options has the potential to influence landscape and visual amenity, for example, effects on water levels in rivers beyond those occurring naturally as a result of the drought alone. These effects are likely to be experienced locally, close to the area of water abstraction, rather than for the National Character Area as a whole.

B.8.2 Future Baseline

It is envisaged that landscape and designated sites will be maintained and enhanced for the enjoyment of the public (although not through the DP itself), although with the pressures for housing in many parts of the Thames River basin, there are likely to be some threats to visual amenity more broadly beyond designated landscape areas (including within Green Belt). Climate change and land use change (e.g. due to agricultural reform) may also, in the longer term, lead to changes in to landscape character.

The NPPF highlights the different roles and characteristics of various areas, promoting the vitality of major urban centres while protecting the Green Belts surrounding them. It recognises the intrinsic character and beauty of the countryside and supports thriving rural communities. The NPPF states that great weight should be given to conserving landscape and scenic beauty in National Parks and National Landscapes, which have the highest level of protection. It also specifies that planning permission should be refused for major developments in these designated areas, except in exceptional circumstances and where it can be demonstrated that they are in the public interest[184].

B.8.3 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 National Parks, National Landscapes and other areas of high landscape and visual amenity value.
- The need to minimise any adverse impacts upon landscape that may result from the DP.
- The need to conserve and enhance landscape character and distinctiveness, taking into account the effects of climate change.

[183] CPRE, the countryside charity (2007) Tranquillity Map: England Available at https://www.cpre.org.uk/resources/tranquility-map-england/ [Accessed March 2025]

[184] Ministry of Housing, Communities and Local Government (2024) National Planning Policy Framework Available at https://www.gov.uk/government/publications/national-planning-policy-framework--2 [Accessed March 2025]

APPENDIX C: STATUTORY CONSULTEE SCOPING COMMENTS AND RESPONSES

This Appendix sets out the consultation responses received from the statutory consultation on the Scoping Report. The consultation period was held between May and June 2025. The table below sets out the responses to the comments received together with particular sections where the comments have been addressed during drafting of the Environmental Report and accompanying Appendices.

No	Consultee	Comment	Response	Where addressed in DP Environmental Report
1	EA	Study area defined in Section 1.2.5 and identifies the potential for effects outside of the Thames water supply area. However, Figure 1-1 doesn't match the text description in Section 1.2.5. Update SEA Study area on figure to match text description.	The area under consideration includes the "whole of the Thames river basin (reflecting the natural catchment area for Thames Water's existing water supplies)". This is represented by the Thames Water Management Catchment in Figure 1-1.	Section 1.2.5 Figure 1-1
2	EA	Temporal scope of SEA outlined in 1.2.6 - matches temporal scope of the Drought Plan 2027-2032. Note error, however in Section 1.2.6 where it refers to options after 2031 not being included - assume this should be 2032 to match drought plan temporal scope. Amend text to ensure clarity.	Updated in Section 1.4.1 of the Environmental Report to refer to 2032.	Section 1.2.6
3	EA	Additional PPPs require consideration to ensure that potential cumulative effects are taken into account in the assessment. Consideration should be given to Drainage & Wastewater Plans or **Strategic Resource Options** where relevant, and more recent legislative changes included the Water (Special Measures) Act 2025, and the proposed draft Planning and Infrastructure Bill. The review of the Environment Improvement Plan would also provide useful context.	Comment noted. We have added the following PPPs to our review: - Thames Water Drainage & Wastewater Management Plan (DWMP) - SROs (see comment in Column N) - Water (Special Measures) Act 2025 - Draft Planning and Infrastructure Bill - Environmental Improvement Plan annual progress report: April 2024 to March 2025	Section 2.2 and Table 2-1, Appendix A
4	EA	All SEA topics have been scoped in to the SEA assessment following review of the PPP and baseline. Justification hasn't been explicitly provided, however, this does match those issues drawn out of the PPP review and baseline. The scope could have been narrowed further potentially if scoping has been undertaken at the effects level rather that topic level. This could be considered to narrow down scope of the assessment and ensure focus on those effects that are potentially significant. Consider whether the scope of the assessment could be narrowed further through scoping at effects level.	Justification for the approach was initially outlined in Section 1.4.1 of the Scoping Report and is reiterated in Section 1.2.1 of the Environmental Report. The SEA seeks to ensure a high level of environmental protection and to support the integration of environmental considerations into the development and adoption of plans. Consistent with current best practice in the water industry, the assessment has considered the full range of environmental and social impacts. Where appropriate, a more	Section 3.1

No	Consultee	Comment	Response	Where addressed in DP Environmental Report
			focused scope may be applied during subsequent, project-level assessments.	
5	EA	Consideration should be given to adding symbols to the effects assessment tables to support accessibility to the information. Table 3-3 is only colour coded. Consider accessibility of assessment tables	Comment noted, we will review this between draft and final and add symbols to improve clarity if required.	No action
6	EA	Stated that for the methodology for assessing the environmental effects of severe droughts methodology for assessing env impacts will remain as per 2018. The reasoning behind this is unclear and no justification is given in the report. It is unclear as to how this link with the SEA assessment and as such unable to confirm that environmental effects are being fully considered. Please provide clarification on the methodology and reasoning for it not being updated.	The reference to the 2018 severe droughts methodology relates only to the overarching approach for producing EARs in support of re-application of drought permits following their original six-month period. This does not influence, constrain, or replace the individual option-level environmental assessments undertaken within the SEA. Each drought option has been assessed in full using the updated SEA methodology and significance criteria. The 2018 approach is maintained solely for continuity in the wider severe-drought context, and does not affect the robustness or completeness of the SEA option assessments.	No action
7	EA	Formatting guide for bullets present in the list of bullets within this section. Delete formatting guide	Updated in Section B.4.2 of the Environmental Report.	Section B.4.2
8	EA	Note that there are cross referencing errors showing in these two sections. Amend cross reference links.	Sections are specific to scoping report, now updated in the Environmental Report	Section 4.2.3 and Section 4.2.4.
9	EA	Typo, missing text - 'non-essential use ban on selected water...'. Amend text.	Updated in Section 1.3.1 of the Environmental Report.	Section 1.3.1
10	EA	Should be 'remain valid' in last line. Amend Text.	Updated in Section 1.4.2 of the Environmental Report.	Section 1.4.2
11	EA	KEN_0006 - the text in the second column should refer to the Thames, not the Thame. Has the potential output from the KEN_0006 taken into account any learning from the 2022 drought? Amend text and ensure the outputs reflect latest understanding.	Text updated in Table 1-2.	Table 2-1

No	Consultee	Comment	Response	Where addressed in DP Environmental Report
12	EA	Is this actually a viable DP option at the moment? I thought the canal transfer was still in development and Grimsbury Reservoir might need a lot of work to resume service? Or is this scopting report anticipating these will be in place over the DP period? Clarify if needed.	The options presented at Scoping were based on DP22 and the Oxford Canal option has since been removed for DP27.	No action
13	EA	This short para I think needs some punctuation/added text to make the meaning clearer. Amend text.	Paragraph edited. See third paragraph in Section 1.2.2 of the Environmental Report	Section 1.2.2
14	EA	The timings may not work for the analysis of relevant plans for the environmental report, but over the next few months a number of Local Nature Recovery Strategies will be publised across TWUL's supply area, and it may be worth adding this to the list of consulted plans - even if the final LNRSs are not produced most will heav been through the public consultation stage with the consultation drafts still online. Consider adding LNRSs to the list of plans.	Comment noted, we will review any published LNRS for the TWUL supply area and, if relevant, add to the list of PPPs.	Appendix A
15	EA	This figure appears three times (and again on page 46). Remove three of the duplicate figures.	Due to a crossreferencing error. Now rectiffied in Section B1.1 in Appendix B of the Environmental Report.	Section B1.1 in Appendix B
16	EA	Incomplete sentence at end. Add text.	Due to a crossreferencing error. Now reads well in Section B1.1 in Appendix B of the Environmental Report.	Section B1.1 in Appendix B
17	EA	Minor typo - should be 'which are related to' in penultimate line. Amend text.	Amended in Section B1.1 in Appendix B of the Environmental Report.	Section B1.1 in Appendix B
18	EA	Typo, missing text - this line, should be 'the majority of them in the terrestrial environment. Amend text.	Amended in Section B1.1 in Appendix B of the Environmental Report.	Section B1.1 in Appendix B
19	EA	It may be worth adding reference to the production of Local Nature Recovery Strategies to the narative on future trends. Although bespoke funding for these is uncertain, they will set out the local ambition for nature recovery based on widespread stakeholder engagement and will/do contain measures very relevant for the water environment. Consider updating text.	Comment noted, we have added reference to the production of Local Nature Recovery Strategies to the future baseline narrative in Section B.1.2.	Section B.2.1 in Appendix B
20	EA	I'm not sure why there is reference to the Severn catchment here, as no TWUL assets affect this catchment (and I'm assuming this isn't some vague recognition of potential long-term water supply options!). Even the analysis of South East angling trends emphasises salmon and sea trout fisheries which are not really relevant to the freshwater Thames. Consider removing reference to the Severn and replace with the main angling activities on the Thames – coarse fishing, with	Updated in Section B.2.1 in Appendix B of the Environmental Report	Section B.2.1 in Appendix B

No	Consultee	Comment	Response	Where addressed in DP Environmental Report
		fly-fishing for trout on a number of tributaries particularly the chalk rivers and Cotswolds.		
21	EA	Missing word in penultimate line '..it is essential to ensure...' Amend text.	Complete sentence already in section. See Section B2.1 of the Environmental Report.	Section B.2.1 in Appendix B
22	EA	River Thame mis-labelled as River Thames; slightly curious that none of the Cotswold tributaries are shown such as the Coln, Windrush and Evenlode, nor mentioned in the text. Correct the figure.	Figure amended and tributaries added in Section B.4 of of Appendix B in the Environmental Report	Section B.4 of of Appendix B
23	EA	Reference to the EA having produced catchment flood risk plans for England and Wales in the 2nd para should be corrected to reference NRW as the responsible body for Wales. The bullet points at the end of this section include two which are instructions for authors and not relevant to the issue. Amend text.	Amended in Section B.4.2 in Appendix B of the Environmental Report	Section B.4.2 in Appendix B
24	EA	Appears twice, second time tow pages down, albeit this may be a function of viewing in Sharepoint? Check whether figure is duplicated.	Due to a crossreferencing error. Amended in Section B.5.1 in Appendix B of the Environmental Report	Section B.5.1 in Appendix B
25	EA	Figure is duplicated. Delete duplication.	Due to a crossreferencing error. Amended in Section B.6.1 in Appendix B of the Environmental Report	Section B.6.1 in Appendix B
26	EA	Acknowledging this is standard terminology, I am always uncomfortable with the use of the term 'value' when this leads to the descriptors of low, medium and high, mainly because this is partly subjective and partly hides the fact that this relates to an evaluation of 'relative significance'. The reason this grates is because it often results in features of only local significance as being adjudged as 'low' value, whereas these may be highly valued by local communities - be they local wildlife sites, landscapes or other resources. terming them as 'low value' is often then considered as undermining their value to those impacted. This may be of little import in relation to the Drought Plan, but consideration could be given to at least providing some textual context for this? Consider further explanatory narrative regarding use of term of 'value'?	Thank you for your comment. In this context, the term "value" refers to the importance of biodiversity in delivering ecosystem services and engaging people in conservation, rather than assigning a relative significance or ranking (e.g. low, medium, high) to specific features. We have added a footnote to the report to clarify this to avoid any potential misunderstanding.	No action.
27	EA	Proposed Framework for Assessment Generally happy with the approach set out here.	Noted	No action.
28	EA	In reflection of the maintenance and operational challenges associated with the LON_0028, does the description and ways of working established for the scheme remain relevant and appropriate, or does this need revision? Review whether the	Comment noted. The description has been updated in the plan and Environmental Report	Table 1-2

No	Consultee	Comment	Response	Where addressed in DP Environmental Report
		established operation of the LON_0020 remain apprioriate or whether an update is required to inform assessment.		
29	EA	Unclear description regarding change in LON_0027 residual flow in relation to LTOA. Clarify meaning of 'earlier reduction in residual flow'.	Comment noted. The description has been updated in the plan and Environmental Report	Table 1-2
30	EA	Text error related to KEN_0006. Correct 'Thame' to 'Thames' and include other tributaries the KEN_0006 discharges to.	Updated in Table 1-2 of the Environmental Report	Table 1-2
31	EA	Will this list be updated based on the updated drought plan, or is this exhaustive? Are all these options deliverable? Are there any new or refined options that need to be included in the list e.g. to deal with licence changes within the coming 5 years. Update list based on updated drought plan.	This list was based on Drought Plan 2022 for the purposes of starting the SEA Scoping process and will be updated to reflect Drought Plan 2027.	Table 1-3
32	EA	Are other 'more before level 4' measures considered? Ensure relevant measures are included in assessment.	Yes, more measures have been included in the plan and are set out in Table 1-4	Table 1-4
33	EA	Will use of summer/winter permit implementation be based on the outputs of the EARs? How will this then be applied to the cumulative assessment if the SEA is based on drought permits being applied at different times? Clarify methodology for determining 'worst case basis' of drought permit implementation and how this will carry through to cumulative assessment.		
34	EA	Map formatting issue. Correct map sizing to page layout.	Due to a crossreferencing error. Amended throughout Appendix B of the Environmental Report	Appendix B
35	EA	It is stated that the information in the SEA will be updated based on the EAR updates that are currently being carried out as part of DP2027. Clarify whether the EAR update will inform the SEA or vice versa, and confirm that the timing of EAR updates will be sufficient for the SEA.	Clarifying statement added in Section B1.1 of Appendix B in the Environmental Report.	Section B1.1 of Appendix B
36	EA	The figures in this section identify features within Thames Water's supply area. It is noted earlier in the SEA scoping document that features may fall outside the Thames Water supply boundary due to scale of impact. Clarify whether the features identified are exhaustive, or limited to within the Thames Water supply area.	The baseline includes features and statistics/figures within the Thames Water supply area. Where potential impacts extend beyond this area, such as those identified through the HRA supporting the SEA, these have been reported in the relevant sections of the documentation.	

No	Consultee	Comment	Response	Where addressed in DP Environmental Report
37	EA	Key does not match map. Update key.	Figure updated. See Figure B-3 in Appendix B in the Environmental Report.	Figure B-3 in Appendix B
38	EA	The baseline statistics shown are often out-dated using figures from 2010-2020. Ensure latest available data is used to inform baseline.	Information used during scoping is what was available at the time. Updates have now been made to the section using information released in June and October 2025. See Section B2 of Appendix B in the Environmental Report.	Section B2 of Appendix B
39	EA	Map label errors - River Thame should read 'Thames', River Wey navigation identified as a major trib, but not river Wey. Other tribs in preceding text 2.3.7.1 not identified. Update mapping.	Rivers map updated in Section B.4 of of Appendix B in the Environmental Report.	Section B.4 of of Appendix B
40	EA	Table 2-12 Are the gauges identified the most relevant given not all cover data to current? Review whether there are more appropriate gauges for baseline.	Note that these have been used to determine the baseline	
41	EA	Check WFD information is correctly reported e.g. chemical status is good/fail, not 'bad'. Check reporting of WFD data is correct, and terminology aligns.	Reported as Good/Fail in table, see Table B-12 in Appendix B of Environmental Report.	Table B-12 in Appendix B
42	EA	Figures differ from preceding text, data is flagged as 2019. Check reporting of WFD data is correct, latest data and terminology aligns.	Latest data used from https://environment.data.gov.uk/catchment-planning/RiverBasinDistrict/6/classifications. Described as from 2019 Cycle 3.	No action
43	EA	Repeated figure. Check formatting throughout.	Amended in Section B.8.1 in Appendix B of the Environmental Report	Section B.8.1 in Appendix B
44	EA	Under the Water SEA topic there are no objectives considering climate change, yet climate change is identified in the Table 2-25 summary. Consider whether the objectives are comprehensive against the key issues identified.	Climate change considerations are comprehensively addressed within the Air and Climate topic. While there is thematic overlap with the Water topic, this approach avoids duplication by consolidating climate-related content under Air and Climate.	No action
45	EA	Repeated text above and below table. Formatting.	Amended in Section 4.3.1 of the Environmental Report	Section 4.3.1
1	Natural England	The report recognises the importance of hydrological connectivity which might go beyond boundary of TW's operational area. This is good.	Noted	No action

No	Consultee	Comment	Response	Where addressed in DP Environmental Report
2	Natural England	It is important to note that the Review of Consents (ROC) only related to impacts on SAC and SPA features. The SEA must consider wider environmental impacts. Also, ROC is dated now. Where the conclusions of ROC are being relied on please check whether there has been any material change in circumstance such as new evidence, changes in abstraction regime, unforeseen climate change impacts etc., and account for any uncertainty in your assessment.	Comment noted. Where ROC conclusions are referenced, we will check for any material changes in circumstances and reflect any associated uncertainties in the SEA assessment.	No action
3	Natural England	The following plans, policies and programmes should be added (Section 2.2 - Table 2-1) and considered in the review of the environmental baseline and issues and opportunities Biodiversity, flora and fauna: · Government guidance "Complying with the biodiversity duty" (May 2023) https://www.gov.uk/guidance/complying- with-the-biodiversity-duty · UK Biodiversity Framework (UKBF), May 2024 https://hub.jncc.gov.uk/assets/19a729f6-440e-4ac6-8894- cc72e84cc3bb · Water Industry Strategic Environmental Requirements (WISER).	Noted. These have been added as part of the PPP review	Appendix A
4	Natural England	Table 2-1 Landscape and visual amenity: · Levelling Up and Regeneration Act 2023. Population and human health: · Green infrastructure strategies.	Noted. This has been added as part of the PPP review	Appendix A
5	Natural England	Table 2-1Error! Reference source not found. We notice this error in the document. Please fix it.	Noted. This has been updated in the Environmental Report.	Section 2.3.1
6	Natural England	Environmental baseline conditions and review No comment	Noted	No action
7	Natural England	It is a welcomed precaution to see this thorough action taken, as well as to consider cumulative and in-combination impacts. Please note NE has not checked that all sites are included / counted.	Thank you for your comment.	No action
8	Natural England	Please review formatting. This is repeated 3 times here, and again on p.46. Also, I suggest removing ancient woodland from this map, as for this purpose, they are a not 'designated site' and it obscures other visual information.	Due to cross referencing error. This has been rectified in Section B1 of Appendix B in the Environmental Report. The map has been updated in the same section. See Figure B-1 in Appendix B in the Environmental Report.	Section B1 of Appendix B
9	Natural England	I suggest adding a separate map of ancient woodland here, rather than combining with designated sites.	Figure added. See Figure B-2 in Appendix B in the Environmental Report.	Figure B-2 in Appendix B

No	Consultee	Comment	Response	Where addressed in DP Environmental Report
10	Natural England	Some good points are outlined here, but there are further secondary impacts to be considered such as habitat or community fragmentation, and impacts on food availability, reproduction, predation risk, competition and survival of species.	Updated in Section B.1.1 in in Appendix B of the Environmental Report	Section B.1.1 in in Appendix B
11	Natural England	Recovery times are important too. Will the implementation of the drought option delay recovery from drought pressures? It's not just about whether the site will recover, but how long it will take, and whether delays will impact the ecology further in the meantime.	The drought options will be implemented under pre-existing drought conditions. Their application is guided by the Environmental Assessment Reports (EARs), with the overarching aim of avoiding irreversible harm to sensitive ecological features. It is recognised that current understanding of the physiological and behavioural responses of aquatic organisms to drought remains limited. Tolerance levels are influenced not only by the duration, frequency, and severity of drought events, but also by the composition of species present (biotic assemblage) and prevailing environmental conditions (abiotic factors) before and during the drought. In response to these uncertainties, a precautionary approach has been adopted within the EARs, which will inform the broader environmental assessment and the environmental report.	No action
12	Natural England	includes a commitment to restore restoring 75% terrestrial Please correct sentence error - agree the word to be restore or restoring.	Text amended in Section B.1.2 in Appendix B of the Environmental Report	Section B.1.2 in Appendix B
13	Natural England	distributions indirectly though the impact of invasive species Should the underlined word be "through"?	Text amended in Section B.1.2 in Appendix B of the Environmental Report	Section B.1.2 in Appendix B
14	Natural England	Figure 2-2 Areas Used for recreation Legend needs updating - the National Parks show green not brown	Figure updated. See Figure B-3 in Appendix B in the Environmental Report.	Figure B-3 in Appendix B
15	Natural England	Flood risk - The caption style is in the Styles list (Caption) What does this mean?	Amended in Section B.4.2 in Appendix B of the Environmental Report	Section B.4.2 in Appendix B
16	Natural England	Flood risk - Please style your labels consistently in your document (e.g. just a space, full stop or colon after the number). What does this mean?	Amended in Section B.4.2 in Appendix B of the Environmental Report	Section B.4.2 in Appendix B

No	Consultee	Comment	Response	Where addressed in DP Environmental Report
17	Natural England	2.3.8.1 - The main reason for a geological citation for an SSSI is related to disused quarries and geological important sites such as gravels used to reconstruct climate change. This sentence is unclear.	Statement amended for clarity in Section B.5.1 in Appendix B of the Environmental Report	Section B.5.1 in Appendix B
18	Natural England	2.3.8.1 – It can be seen from This sentence is unfinished.	Due to cross referencing error. This has been rectified in Section B.5.1 of Appendix B in the Environmental Report.	Section B.5.1 in Appendix B
19	Natural England	Section 2.3.9.2 - Repeated sentence	This has been updated in the Environmental Report.	Section B.6.2 in Appendix B
20	Natural England	There are opportunities here to do more. Under Section 245 of the Levelling Up and Regeneration Act 2023, public bodies have a duty to seek to further the statutory purposes of National Landscape designations in carrying out their functions.	Text has been added to Section B.8.1 in Appendix B of the Environmental Report	Section B.8.1 in Appendix B
21	Natural England	This duty also applies to proposals outside the designated area but impacting on its natural beauty.	Comment noted.	No action
22	Natural England	This is a helpful summary of the findings of the policies, plans and programmes review, and we are satisfied that the key issues have been considered in relation to Natural England's interests.	Comment noted.	No action
23	Natural England	We note the outline of the draft objectives. This is good	Comment noted.	No action
24	Natural England	It is very important that these questions capture consideration of a wide range of ecological impacts. It isn't just about water availability / drying of habitats. It needs to consider the potential for habitat or community fragmentation, and impacts on species' range, movement, food availability, reproduction, risk of predation/decline, competition and ultimately their survival or risk of hindering recovery. Impacts on ecology resulting from reduced dissolved oxygen, higher pollutant concentration (due to lower dilution functions), water temperature changes or algal bloom risks should also be considered. An additional question around recovery time would be helpful, e.g. Will it prolong the impact of drought on habitats and species?	Question amended and 2 additional indicator questions added. See Table 4-1. Will it protect and enhance aquatic, transitional and terrestrial habitats and species including food availability, reproduction, risk of predation and decline, competition and their survival? Will it limit impacts on ecology resulting from changes in water quality, temperature fluctuations, or increased risk of algal blooms? Will it prolong the impact of drought on habitats and species?	Table 4-1

No	Consultee	Comment	Response	Where addressed in DP Environmental Report
25	Natural England	We noted that the Indicator Questions for Water do not mention the risk of delayed recharge of groundwater, or delayed recovery (to meet regulatory standards) following drought. We recommend that this risk and its impacts are considered.	We acknowledge the importance of considering the risk of delayed groundwater recharge and recovery following drought, and whilst not currently specifically reflected in the indicator questions, we consider that it is addressed through broader questions relating to water availability, quality and resilience. However, to improve clarity, an additional indicator has been added to Table 4.1 - " Will it affect the resilience of groundwater systems, including risk to recharge rates and recovery following drought?"	Table 4.1
26	Natural England	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? It would be helpful to split this question into two: 1) Will it help to protect ....? 2) Will it avoid the loss of ...?	Noted. The question has been split to align with comment made.	Table 4.1
1	Historic England	Clarify that 'cultural heritage' includes archaeological heritage as per Schedule 2, Section 6 of the SEA Regulations.	Clarification added in Section 1.2.1 of the Environmental Report	Section 1.2.1
2	Historic England	Amend first key message to reflect the NPPF definition of 'significance'. Replace 'historic buildings' with 'heritage assets'.	Updated in Table 2-1 and Table 4-1 of the Environmental Report	Table 2-1 and Table 4-1
3	Historic England	Query whether third and last key messages are distinct—both refer to hydrology and wetland impacts.	Yes, the third objective takes into consideration potential hydrological sensitivity on built heritage or archaeological sites that rely on stable water conditions.	No action
4	Historic England	Simplify fourth key message to: "Promote the conservation and enhancement of the historic environment and its component heritage assets."	Updated in Table 2-1 and Table 4-1 of the Environmental Report	Table 2-1 and Table 4-1
5	Historic England	Highlight that heritage assets are finite and irreplaceable.	Noted, the report has been updated to reflect this.	Section B.7.1
6	Historic England	Query inclusion of certain references (e.g. duplicated or outdated documents).	Noted. Although some PPPs may be outdated in some cases they remain useful for context to certain environmental issues. The PPPs have been reviewed and updated to supersede outdated documents.	Appendix A

No	Consultee	Comment	Response	Where addressed in DP Environmental Report
7	Historic England	Suggest sub-titling section to separate legislation, policy, guidance, and research.	Thank you for your suggestion. We appreciate the intent to improve clarity. However, we consider the current structure of grouping relevant policies, plans and programmes by SEA topic and level (international, national etc.) provides a clear and accessible overview that supports the scoping process and aligns with best practice. The nature of each document is described in full in Appendix A to maintain transparency.	
8	Historic England	Update Heritage at Risk Register to 2024 edition; note Thames Landscape Strategy is being updated.	Updated in Table 2-1	Table 2-1
9	Historic England	Recommend adding National Heritage List for England and Historic Environment Record; or remove HAR reference until Baseline section.	Both the National Heritage List for England and Historic Environment Record have been included in the policies table - Table 2-1 and have been referred to in the baseline. See Section B.7.1	Table 2-1 and Section B.7.1
10	Historic England	Add Levelling Up and Regeneration Act 2023, Town and Country Planning Act 1990, Hedgerow Regulations 1997, and Principles of Selection for Listed Buildings.	Noted, these have been added.	Appendix A
11	Historic England	Replace 'historic structures' with 'significance of heritage assets'. Remove 'historical context of their setting'.	Noted. Text has been updated in Appendix B.	Section B.7.1
12	Historic England	Clarify why this figure is included twice—possible error.	Confirm this was in error. This has been amended in the report.	Section B.7.1
13	Historic England	Indicate that two maps are used due to asset density; suggest mapping HAR assets.	Clarification and map of HAR assets added in Section B.7.1 in Appendix B of the Environmental Report	Section B.7.1
14	Historic England	Clarify or remove summaries of designated assets outside TW region; suggest highlighting number of at-risk assets.	Text amended in Section B.7.1 in Appendix B of the Environmental Report. Number of at risk assets already included in Baseline sub-section.	Section B.7.1
15	Historic England	Correct references from 'Heritage England' to 'Historic England'.	Amended in Section B.7.1. in Appendix B of the Environmental Report	Section B.7.1

No	Consultee	Comment	Response	Where addressed in DP Environmental Report
16	Historic England	Add general points on significance of designated and non-designated assets, importance of River Thames, RPGs, and drought impacts.	Added in Section B.7.1 in Appendix B of the Environmental Report	Section B.7.1
17	Historic England	Revise second sentence on HAR programme—removal from register is generally positive.	Sentence is in agreement with this - economic challenges may hinder efforts to conserve and restore heritage assets resulting in fewer sites being removed from the HAR Register. Updated for clarity	Appendix B
18	Historic England	Expand on indirect climate change effects and potential adverse impacts of adaptation measures.	Noted. We have added text to this section to expand on indirect climate change effects.	Section B.7.2
19	Historic England	Revise first bullet to focus on conserving significance; remove second bullet; add reference to development impacts.	Noted. This has been updated in the report.	Section B.7.3, 3.4.7 and in Table 4.1
20	Historic England	Revise key messages and issues per HE2–HE5 and HE19.	The key messages and issues have been updated as per previous comments.	Table 4-1
21	Historic England	Simplify SEA objective to: "Conserve and enhance the significance (including any contribution made by setting) of heritage assets."	Noted. The objective has been simplified.	Tables 4-1, 4-2 and Appendix D.
22	Historic England	Simplify indicator questions to focus on avoiding harm and improving understanding/enjoyment.	Noted. The indicator questions have been simplified to focus specifically on avoiding harm and enhancing understanding/enjoyment, as requested.	Table 4-1
23	Historic England	Express reservations about matrix-based methodology; prefer qualitative approach and request worked example.	The matrix-based methodology will be used as a guide only and professional judgement would also be applied to the assessments. The assessments of the drought actions are supported by commentary and the full assessment matrices will be provided in Appendix D.	No action

APPENDIX D: ASSESSMENT TABLES

See separate Appendix.

APPENDIX E: QUALITY ASSURANCE

ODPM Guidance[185] on SEA contains a Quality Assurance checklist to help ensure that the requirements of the SEA Regulations are met. The checklist is reproduced in **Table E-1** indicating where this Environmental Report meets the requirements.

Table E-1: Quality Assurance Checklist

Checklist item	Comments
Objectives and context	
The plan's or programme's purpose and objectives are made clear.	The purpose of the DP27 is set out in **Sections 1.1-1.4**.
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** and **Appendix A**.
SEA objectives, where used, are clearly set out and linked to indicators and targets where appropriate.	Objectives are set out in **Section 3.**
Links with other related plans, programmes and policies are identified and explained.	Links are identified in **Section 2** and **Appendix A**.
Conflicts that exist between SEA objectives, between SEA and plan objectives and between SEA objectives and other plan objectives are identified and described.	Cumulative effects such as those associated with the DP27 and other plans are addressed in **Section 6**.
Scoping	
Consultation Bodies are consulted in appropriate ways and at appropriate times on the content and scope of the Environmental Report.	This Scoping Report is a part of the consultation process required to meet the requirements of the SEA Regulations and has been circulated to consultees. Further consultation will be undertaken on the Environmental Report and DP27. The consultation process is described in **Section 1.9**.
The assessment focuses on significant issues.	The scope of the assessment reflects the geographic extent of Thames Water's water supply area and provides a comprehensive approach to assessment (reflecting the large number of interactions dependent on the continued supply of water) which enabled the subsequent assessment to determine which impacts would be considered significant.
Technical, procedural and other difficulties encountered are discussed; assumptions and uncertainties are made explicit.	Difficulties and assumptions are set out in **Section 4.3.5.**
Reasons are given for eliminating issues from further consideration.	The proposed SEA objectives provide a comprehensive basis for assessment and no issues were eliminated at the Scoping stage.
Alternatives	
Realistic alternatives are considered for key issues, and the reasons for choosing them are documented.	The appraisal framework has been used to assess the drought options.
Alternatives include 'do minimum' and/or 'business as usual' scenarios wherever relevant.	Assessment of alternatives (the drought options) have been considered in the Environmental Report.
The environmental effects (both adverse and beneficial) of each alternative are identified and compared.	Assessment of alternatives (the drought options) have been considered in the Environmental Report.

[185] Office of the Deputy Prime Minister (2005) A Practical Guide to the Strategic Environmental Assessment Directive.

Checklist item	Comments
Inconsistencies between the alternatives and other relevant plans, programmes or policies are identified and explained.	Assessment of alternatives (the drought options) have been considered in the Environmental Report.
Reasons are given for selection or elimination of alternatives.	Assessment of alternatives (the drought options) have been considered in the Environmental Report.
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 3 and Appendix B 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 Thames Water's water supply area, and bordering regions where appropriate, are described in **Section 3 and Appendix B.**
Difficulties such as deficiencies in information or methods are explained.	Difficulties and limitations are set out in **Section 4.3.5.**
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 have been set out in Section 5, Section 6 and **Appendix D**.
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 have been set out in the Environmental Report, using an appraisal Section 4.3. Effects are assessed in Sections 5 and 6 and **Appendix D**.
Likely secondary, cumulative and synergistic effects are identified where practicable.	These effects have been identified in Section 6.
Inter-relationships between effects are considered where practicable.	These effects have been considered within the assessment in **Section 5** and **Appendix D** and also in Section 6 of this Environmental Report where practicable.
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 in the Environmental Report.
Methods used to evaluate the effects are described.	The Environmental Report includes information on the methods used for evaluation of potential effects in **Section 4.**
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 have been incorporated into the assessment undertaken in preparing the Environmental Report, and are described in **Section 7.2**.
Issues to be taken into account in project consents are identified.	Such mitigating measures, if required, will be highlighted against the drought options. It is noted that Environmental Reports which include Environmental Management Plans have been prepared for most of the Drought Permit sites (see **Section 1.5**).
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 has used maps and illustrations where appropriate.
Explains the methodology used.	SEA methodology has been described in **Section 4**.

Checklist item	Comments
Explains who was consulted and what methods of consultation were used.	The consultation strategy, including organisations and dates of consultation is included in **Section 1.9**.
Identifies sources of information, including expert judgement and matters of opinion.	Sources of information have been detailed in various sections of the 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.	The Scoping Report and Environmental Report are part of the consultation process required to meet the requirements of the SEA Regulations. Both have been circulated to consultees. The consultation process is described in **Section 1.9**.
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 Scoping Report and Environmental Report are part of the consultation process required to meet the requirements of the SEA Regulations. Both have been circulated to consultees. The consultation process is described in **Section 1.9**.
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.	Consultation responses from the Scoping stage have been incorporated into the Environmental Report. Responses from consultation on the draft Environmental Report will be incorporated in the development of the final Environmental Report. After finalisation of the DP, a statement will be published describing how the SEA and the responses to consultation have been taken into account during the preparation of the DP. The consultation process is described in **Section 1.9**.
An explanation is given of how they have been taken into account.	Consultation responses from the Scoping stage have been incorporated into the Environmental Report. Responses from consultation on the draft Environmental Report will be incorporated in the development of the final Environmental Report. After finalisation of the DP, a statement will be published describing how the SEA and the responses to consultation have been taken into account during the preparation of the DP. The consultation process is described in **Section 1.9**.
Reasons are given for choosing the plan or programme as adopted, in the light of other reasonable alternatives considered.	This will be set out in the Final DP following consultation on the Draft DP27 and Environmental Report.
Monitoring measures	
Measures proposed for monitoring are clear, practicable and linked to the indicators and objectives used in the SEA.	Section 7.3 provides an overview of proposals for monitoring.
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 are made in **Section 7.3**, with monitoring taking place following implementation of the DP, further to consultation with regulatory authorities including the Environment Agency and Natural England.
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 are made in **Section 7.3**, with monitoring taking place following implementation of the DP, further to consultation with regulatory authorities including the Environment Agency and Natural England.

Checklist item	Comments
Proposals are made for action in response to significant adverse effects.	Mitigation measures for adverse effects are suggested in **Section 7.2**.

E: info@ricardo.com
W: www.ricardo.com