

AtkinsRéalis



# SEA Environmental Report

Portsmouth Water

March 2026

# PORTSMOUTH WATER DRAFT DROUGHT PLAN 2027

# Notice

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# 1. Introduction

## 1.1 Purpose of the Document

This is the Strategic Environmental Assessment (SEA) Environmental Report of the Portsmouth Water draft Drought Plan 2027 (dDP27), which has been prepared by AtkinsRéalis. In addition, Habitats Regulation Assessment (HRA) has been undertaken as a parallel process to, and has informed, this SEA and is reported separately. This SEA Environmental Report identifies the likely environmental effects of implementing the draft Drought Plan, with an overview of the Drought Plan presented in the following section.

## 1.2 The Background and need for the Drought Plan

The purpose of a Drought Plan is to set out the timely actions that a water company will take to ensure continuity of drinking water supply during a drought scenario, whilst at the same time continuing to protect the environment. Portsmouth Water are required to update their current Drought Plan (published in April 2022) and submit a new draft Drought Plan for 2027 to Defra by 31<sup>st</sup> March 2026. A final version of the Drought plan that addresses consultation comments will be published in 2027, subject to regulator approval.

Portsmouth Waters draft Drought Plan has been prepared under the Water Industry Act 1991, in accordance with the Drought Plan Regulations 2005, and the Drought Plan (England) Direction 2025. It follows the EA's Drought Plan Guideline 2025 and is aligned with their most recent Water Resource Management Plan (WRMP24)<sup>1</sup> as published in October 2024, and the Regional Resilience Plan (RRP) currently being created for the South East region by Water Resources South East (WRSE).

The WRMP24 and the Drought Plan make up two of the four company plans which together show how Portsmouth Water will deliver on their company vision and priorities for their customers. The other two plans are 'Our Long-Term Vision'<sup>2</sup> and their 'Business Plan 2025-30'<sup>3</sup>.

Portsmouth Water's Drought Plan 2022 explains the drought management actions that would be considered during dry weather. The order of the actions has been carefully considered to protect the environment and customer supplies. The actions for managing a drought can be divided into two types. Those which focus on demand-side actions (reducing the need for water) and supply-side actions (such as drought permits or orders). The actions within Portsmouth Water's current Drought Plan includes one supply side drought permit and 'More Before 4' interventions (Option A – Recommissioning of Source U, Option B – Recommissioning unused private boreholes and Option C – Increasing pump capacity and lowering pump levels at sources Q and R).

Drought permits and drought 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. Portsmouth Water's WRMP19 demonstrated that even in the most severe drought scenarios, only a single drought permit may be required, at Source S. This drought permit has been included in previous WRMPs and is still the only supply-side drought permit option within the most recently published WRMP24. The drought permit was chosen as it has the least likely impact upon the environment.

The Environment Agency's environmental assessment for water company drought planning supplementary guidance ("hereafter referred to as the supplementary guidance") requires water companies to complete

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<sup>1</sup> [Water Resources Planning | Portsmouth Water](#)

<sup>2</sup> [PRT18-Long-Term-Delivery-Strategy-2025-2050-Redacted.pdf](#)

<sup>3</sup> [Business Plan 2025-2030 | Portsmouth Water](#)



adequate environmental assessments, monitoring and mitigation plans at planning stage to ensure that the assessments are considered 'application ready' for drought permits and orders. Should a drought permit application be required, the application will therefore need to be accompanied by an Environmental Assessment Report (EAR) alongside the technical monitoring and mitigation plans. In developing the dDP27, the outcome of any EARs prepared for Portsmouth Waters Drought Plan have been used to inform the SEA.



## 2. Approach to the SEA

### 2.1 Introduction

Because drought plans (prepared for water management) set the framework for future development consents of projects listed in Annex II of the EIA Directive (water abstraction), drought plans meet the description set out in reg. 5(2) of the SEA Regulations. As such, an assessment (pursuant to Part 3 of the 2004 Regulations) is automatically required by reg. 5(1).

An SEA has therefore been undertaken under the European Directive 2001/42/EC 'on the assessment of certain plans and programmes on the environment' (the 'SEA Directive'). This Directive came into force in the UK on 20 July 2004 through the Environmental Assessment of Plans and Programmes Regulations 2004 ('SEA Regulations'). The Directive applies to a variety of plans and programmes including water resource planning and planning for droughts. While the United Kingdom has now left the EU, the 2004 Regulations continue to apply to a wide range of plans and programmes, including drought plans, and modifications to them.

The SEA Regulations reflect the overarching objective of the SEA Directive which 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, by ensuring that, in accordance with this Directive, an environmental assessment is carried out of certain plans...which are likely to have significant effects on the environment.”* (Article 1)

The main requirements introduced by the SEA Regulations are that:

- the findings of the SEA are published in an Environmental Report (ER), which sets out the significant effects of the draft plan;
- consultation is undertaken on the plan and the ER;
- the results of consultation are taken into account in decision-making relating to the adoption of the plan; and
- information on how the results of the SEA have been taken into account is made available to the public.
- 

**Table 2-1 - Strategic Environmental Assessment Stages**

Plan Development	Strategic Environmental Assessment	
	Stage	Tasks
Determining the scope of the Plan clarifying goals; specifying the problems or challenges the authority wants to solve	A. Setting the context and objectives, establishing the baseline and deciding on the scope	Identify related plans/programmes
		Identify environmental protection objectives
		Baseline data and likely future trends
		Identify sustainability issues
		Develop objectives, indicators and targets (Assessment Framework)
		Prepare SEA Scoping Report
		Consult on the scope of the SEA



Generating options to resolve challenges; appraising the options and predicting their effects	B. Developing, refining and appraising strategic options	Assess Plan objectives against the Assessment Framework Develop, refine and appraise strategic options Evaluate/select preferred options.
Selecting preferred options for the Plan and deciding priorities	B. Assessing the effects of the Plan's Preferred Options	Predict and assess effects of options taken forward Propose mitigation measures
Production of the draft Plan	C. Prepare Environmental Report	Propose monitoring programme
Consultation on draft Plan	D. Consultation on the Environmental Report	
Production of final Plan	D. Take on board consultation comments	Assess significant changes Prepare supplementary or revised Environmental Report (if necessary)
Adoption of Plan	D. SEA Statement	Prepare Post Adoption Statement

## 2.2 Reporting and Consultation

Key consultation requirements are those set in the SEA Regulations which identify three organisations (in England) to act as statutory consultation authorities in the SEA process: Environment Agency, Natural England and Historic England.

Two consultation periods involving the statutory consultation authorities and, in the latter period, the public are also set in the SEA Regulations. The consultation periods relate to:

- **Scoping.** The responsible authority is required to send details of the plan or programme to each consultation authority so that they may form a view on the scope, level of detail and appropriate consultation period of the Environmental Report. The consultation authorities are required to give their views within five weeks. The scoping Report was consulted upon between 20<sup>th</sup> May 2025 and 24<sup>th</sup> June 2025.
- **The Environmental Report.** The responsible authority is required to invite the consultation authorities and the public to express their opinions on the Environmental Report and the plan or programme to which it relates.

Listed below are the key stakeholders that were consulted on the SEA Scoping Report. The responses from this consultation exercise have been used to inform the SEA, which in turn have helped refine the draft Drought Plan. Whilst responses were generally supportive of the derived SEA framework and methodology, a number of recommendations were made to help strengthen it, as well as ensure that any omissions of key policies, plans and/or programmes and environmental baseline were avoided. The Scoping Report and the comments received from the organisations listed below, together with how these comments have been addressed in the preparation of this SEA Environmental Report, are set out in Appendix A to this report.

- Environment Agency
- Natural England
- Historic England



- Local Authorities in and adjacent to Plan area; and
- Wider consultees from the pre-consultation phase of the draft Drought Plan.

Key reporting requirements are those set by the SEA Regulations:

*'An Environmental Report shall be prepared in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated.'*

Table 2-2 sets out the way the specific SEA requirements have been met in this report.

**Table 2-2 - Schedule of SEA Requirements**

<b>Information to be included in the Environmental Report under the SEA Regulations (Regulation 12 and Schedule 2)</b>		<b>Where covered in the SEA Report</b>
1	An outline of the contents, main objectives of the plan, and of its relationship with other relevant plans and programmes	Chapters 1 and 5
2	The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan;	Chapter 6 and Chapter 8
3	The environmental characteristics of areas likely to be significantly affected	Chapter 6 and Appendices C and D
4	Any existing environmental problems which are relevant to the plan including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC and 92/43/EEC;	Chapter 6
5	The environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan and the way those objectives and any environmental considerations have been taken into account during its preparation	Chapter 5 and 6
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, on issues such as: biodiversity; population; human health; fauna; flora; soil; water; air; climatic factors; material assets; cultural heritage including architectural and archaeological heritage; landscape; the interrelationship between the above factors	Chapters 8, 9, 10, 11, 12 and 13
7	The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan	Chapter 10
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	Chapter 8
9	A description of measures envisaged concerning monitoring in accordance with Regulation 17	Chapter 12
10	A non-technical summary of the information provided under paragraphs 1 to 9	Non-technical summary



The SEA Environmental Report is thus an important consultation document and likely to be of interest to a wide variety of readers including decision makers, other plan/programme practitioners, statutory consultees, NGOs and members of the public. It accompanies the draft Drought Plan on public consultation.

## 2.3 Habitats Regulation Assessment

A Habitats Regulations Assessment (HRA) will be completed and be used to inform the SEA. HRA is required by Regulation 63 of The Conservation Habitats and Species Regulations 2017 (as amended) (the 'Habitats Regulations') for all plans and projects which may have likely significant effects on a European site and are not directly connected with or necessary to the management of the European site. Regulation 105 of the Habitats Regulations relates specifically to land use plans and requires the plan-making authority to make an appropriate assessment of the implications for European sites, before the plan is given effect.

European sites refer to sites protected in the UK under the Habitats Regulations. These include Special Protection Areas (SPAs) and Special Areas of Conservation (SACs), originally created under the European Commission Birds Directive and Habitats Directive, respectively. In addition, in accordance with UK policy, listed and proposed Wetlands of International Importance are included, which form part of a global network of protected sites created under the Ramsar Convention (also referred to as Ramsar sites), as well as sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential SPAs, possible SACs and listed or proposed Ramsar sites.

The stages of HRA process are:

- **Stage 1 - Screening:** To assess whether a plan or project either alone or in combination with other plans and projects is likely to have a significant effect on a European Site.
- **Stage 2 - Appropriate Assessment:** To determine whether, in view of a European Site's conservation objectives, the project or plan (either alone or in combination with other projects and plans) would have an adverse effect (or risk of this) on the integrity of the site with respect to the conservation objectives. If adverse impacts are anticipated, potential mitigation measures to alleviate impacts should be proposed and assessed.
- **Stage 3 - Derogations (allow exceptions):** Where a project or plan is assessed as having an adverse residual impact (or risk of this) on the integrity of a European Site, it may qualify for a derogation. Three legal tests must be applied in the following order:
  - There are no feasible alternative solutions that would be less damaging or avoid damage to the site.
  - The proposal needs to be carried out for imperative reasons of overriding public interest.
  - The necessary compensatory measures can be secured.

It is normal to identify European sites within a plan area, up to 10 km from the plan area and up to 30 km for SACs with bats as a qualifying feature, to capture all possible effects from implementation of the plan. Relevant European sites have been identified in the HRA Screening Report and are reported in Table 2-3.

**Table 2-3 - European sites identified in HRA Reporting**

SAC	SPA	Ramsar
<b>European sites within 10km of Supply Option</b>		
Duncton to Bignor Escarpment	Portsmouth Harbour	Portsmouth Harbour
Singleton and Cocking Tunnels	Solent and Dorset Coast	Pagham Harbour
Solent Maritime	Pagham Harbour	Arun Valley



Arun Valley	Arun Valley	Chichester and Langstone Harbours
River Itchen	Chichester and Langstone Harbours	Solent and Southampton Water
	Solent and Southampton Water	

**SAC with Bats as Qualifying Feature Within 30 km of Supply Options**

Ebernoe Common	
The Mens	
Briddlesford Copses	
Mottisfont Bats	

The HRA is a parallel and separate process to SEA and informs the SEA regarding effects on European sites. The HRA of Portsmouth Water's Drought Plan has been undertaken separately from the SEA and the key output was the HRA Stage 1 Screening Report.

The HRA stage 1 Screening Report concluded that none of the supply-side options will give rise to Likely Significant Effects (LSE) on any of the Habitats Sites listed in Table 2-3, either alone or in-combination with other plans and projects<sup>4</sup>. In accordance with industry guidance, demand-side options have scoped out from the HRA as there are no mechanism by which they can result in LSEs on Habitats Sites. See the HRA Screening Report for further details.

<sup>4</sup> Whilst there is some confidence in the in-combination assessment outcome, this component of the assessment still needs to be fully completed and may be subject to change.



# 3. Setting the Scope of the SEA

## 3.1 Spatial and Temporal Scope

Portsmouth Water is one of 21 regulated water supply companies in England and Wales. Portsmouth Water supply area operates as a single Water Resource Zone. The Portsmouth Water supply area, which aligns with the geographical area of the Drought Plan and associated SEA, is shown in Figure 2-1.

The company abstract, treat and supply an annual average of around 175 million litres of water a day to over 740,000 customers in around 320,000 properties. They also provide water to neighbouring water company, Southern Water Services (SWS) and some customers on new estates are also supplied by New Appointments and Variation companies (NAVs). The clean drinking water is supplied solely from chalk-based sources, including one group of springs, one river and 19 borehole sites, under abstraction licences from the Environment Agency via 3387km of watermains. The area supplied by the company extends through Hampshire and West Sussex from the River Meon in the West to the River Arun in the East, encompassing 868km<sup>2</sup>.<sup>5</sup>

Portsmouth Water abstracts groundwater found within the Chalk rock of the South Downs to supply public drinking water. 100% of their water comes from chalk-based sources: approximately 60% from boreholes and wells, 30% from groundwater springs, and 10% from the River Itchen.

Drought Plans are short-term operational plans that are reviewed and updated at least every five years. The Portsmouth Water Drought Plan is linked to the Company’s Water Resource Management Plan 2024 (WRMP24) in that both plans have the objective of maintaining water supplies to customers, at least for essential purposes, up to a defined drought severity or level of resilience. The WRMP is a long term plan (2025 - 2075) and assesses future demand against supply availability, and determines any measures needed to address a future gap in supplies.

**Figure 3-1 - Portsmouth Water Supply Area**



<sup>5</sup> [Key Facts | Portsmouth Water](#)



## 3.2 Technical Scope

The SEA Regulations reflect the overarching objective of the SEA Directive which 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, by ensuring that, in accordance with this Directive, an environmental assessment is carried out of certain plans...which are likely to have significant effects on the environment.” (Article 1)*

The SEA Directive and the SEA Regulations state that the SEA should consider the following topic areas:

- Biodiversity;
- Population;
- Human health;
- Flora and fauna;
- Soil;
- Water;
- Air;
- Climatic factors;
- Material assets;
- Cultural heritage, including archaeological and built heritage;
- Landscape; and
- the Interrelationship between these factors.

# 4. Methodology

## 4.1 Introduction

SEA is a process that follows a number of sequential stages. This report has been structured to reflect the way in which work has been undertaken, presenting a logical progression through the various tasks that water companies must complete in order to satisfy formal SEA requirements. This sequence of tasks is presented in Table 2-1 in Chapter 2.

The work presented in this report represents the findings of Stage A and Stage B. This Report forms Stage C of the SEA process.

The approach used in the SEA of the Drought Plan is based on the process set out in national guidance and the guidance produced by UKWIR, to meet the requirements of the SEA Regulations. Current guidance sets out a requirement for the preparation of the Environmental Report (documenting work in Stages A and B) which should be used in the public consultation on the Drought Plan.

## Stage A - Setting the Context and Establishing the Baseline

### Other Relevant Legislation, Plans and Programmes

The Drought Plan will both influence and be influenced by other plans, policies and programmes (PPPs) produced by local and combined authorities, by statutory agencies and other bodies with plan making responsibilities. Legislation is a further driver that sets the framework for the DP, both directly and indirectly. Relevant legislation, plans and programmes have been identified and considered to inform the preparation of this Environmental Report (see Chapter 5 and Appendix B).

### Baseline information and Key Environmental Issues

To predict accurately how potential Drought Plan proposals will affect the current baseline, it is first important to understand its current state and then examine the likely evolution of the environment without the implementation of the plan. Baseline information provides the basis for understanding existing local environmental, economic and social issues, in particular in respect of health and equality, and alternative ways of dealing with them; formulating objectives to address these issues and predicting and monitoring effects.

Key environmental issues, across the Portsmouth Water area have been identified as a result of the analysis of the baseline data and the review of other plans and programmes. The identification of these issues helped focus the SEA processes on the aspects that really matter. Implications to Drought Plan development and opportunities for how the Drought Plan could assist in addressing these issues were also identified.

Information on key baseline and sustainability issues is presented in Chapter 6 of this report.

It is important to note that no issues were Scoped out at the Scoping stage of this assessment.

### Developing the SEA Framework

A set of SEA Objectives has been developed, against which the policies and proposals in the Drought Plan could be assessed.

For each objective, assessment aid questions were set out to form the SEA framework. The assessment aid questions provided a clarification of the intended interpretation of each objective to support direction of change



sought through the implementation of the Drought Plan. The questions have guided the Drought Plan assessment process.

The SEA Objectives and assessment aid questions were refined through the consultation on the Scoping Report and are presented in Chapter 7 of this report.

## Stage B – Developing alternatives

### Developing, refining and appraising Strategic Alternatives

In the context of Drought Planning, maintaining a supply of potable water is vital in order to ensure continued public health and safety. It is also important that this is done in a manner in which the environment is protected as much as possible during a period in which many environmental elements will already be under stress due to the prevailing climatic conditions.

In recognition of the above and the emergency nature of Drought Planning, in relation to this Drought Plan, the individual drought Options are considered to be reasonable alternatives. See Chapter 8 for further information.

### Assessing the effects of the draft Drought Plan

Assessing the significance of predicted effects is essentially a matter of judgement. There are a number of factors that will determine the significance of an effect, e.g. its scale and permanence and the nature and sensitivity of the receptor. It is very important that judgements of significance are systematically documented, in terms of the characteristics of the effect which are deemed to make it significant and whether and what uncertainty and assumptions are associated with the judgement. The assessment of significance also includes information on how the effect may be avoided or its severity reduced.

In the current practice of SEA, the prediction and evaluation of effects can be often based on a qualitative seven-point scale in easily understood terms. This assessment has adopted the scale shown in Table 4-1 to assess the significance of effects of the options in the Drought Plan. To help determine the likely significance of affect, a number of supporting criteria have also been developed, as set out in Table 4-2. This includes consideration of impact magnitude and scale of the effect, the probability of the effect, its duration, its frequency and reversibility and the certainty. This helps ensures the SEA is based on a structured, evidence-based evaluation.

**Table 4-1 - Assessment Scale**

Assessment Scale	Assessment Category	Significance of Effect
+++	Major beneficial	Significant
++	Moderate beneficial	
+	Slight beneficial	
0	Negligible or no obvious effect	Not Significant
-	Slight adverse	Significant
--	Moderate adverse	
---	Major adverse	

**Table 4-2 - Characteristics of Effect**



Magnitude	Scale (implications of effect)	Duration (length of time over which effect will be present)	Permanence (lasting of effect)	Certainty (that effect will occur)
Large (L)	Local (L)	Long term (LT)	Temporary (T)	High (H)
Medium (M)	Regional (R)	Medium term (MT)	Permanent (P)	Medium (M)
Small (S)	National (N) Global (G)	Short term (ST)		Low (L)

Moderate and strong beneficial and adverse effects (and combination of this type of effect) have been considered of significance, whereas neutral and slight beneficial and adverse effects (and combination of this type of effect) have been considered non-significant.

Assessments have been undertaken for proposals contained in the draft Drought Plan. The results are discussed in Chapter 9.

As part of the assessment of the draft Drought Plan, a number of mitigation measures (recommendations) are set out in Chapter 10 and also within the EARs. Portsmouth Water has given careful consideration to these recommendations and has addressed these as appropriate in the preparation of the draft Drought Plan for public consultation.

The term mitigation encompasses any approach that is aimed at preventing, reducing or offsetting significant adverse environmental effects that have been identified. A range of measures applying one or more of these approaches has been considered in mitigating any significant adverse effects predicted as a result of implementing the Drought Plan. In addition, measures aimed at enhancing positive effects have also been considered. All such measures are generally referred to as mitigation measures.

However, the emphasis of the assessments has been in the first instance on proactive avoidance of adverse effects. Only once alternative options or approaches to avoiding an effect have been examined, then ways of reducing the scale/importance of the effect have been examined and proposed.

Mitigation can take a wide range of forms, including:

- Refining intervention measures in order to improve the likelihood of positive effects and to minimise adverse effects;
- Technical measures (such as setting guidelines) to be applied during the implementation stage;
- Identifying issues to be addressed in project environmental impact assessments for certain projects or types of projects; and
- Proposals for changing other plans and programmes.

The assessment also considered cumulative, indirect (secondary) and synergistic effects of the draft Drought Plan as outlined in the following section.

## Secondary and Cumulative Effects Assessment

The SEA Regulations require that the assessment of effects include secondary, cumulative and synergistic effects. Secondary or indirect effects are effects that are not a direct result of the plan but occur away from the original effect or as a result of the complex pathway e.g. a development that changes a water table and thus affects the ecology of a nearby wetland. These effects are not cumulative and have been identified and assessed primarily through the examination of the relationship between various objectives during the Assessment of Effects.

Cumulative effects arise where several proposals individually may or may not have a significant effect, but in combination have a significant effect due to spatial crowding or temporal overlap between plans, proposals and actions and repeated removal or addition of resources due to proposals and actions. Cumulative effects can be:

- Additive - the simple sum of all the effects;
- Neutralising - where effects counteract each other to reduce the overall effect; and
- Synergistic - is the effect of two or more effects acting together which is greater than the simple sum of the effects when acting alone. For instance, a wildlife habitat can become progressively fragmented with limited effects on a particular species until the last fragmentation makes the areas too small to support the species at all.



Many environmental problems result from cumulative effects. These effects are very hard to deal with on a project by project basis through Environmental Impact Assessment. It is at the strategic level that they are most effectively identified and addressed.

Cumulative effects assessment is a systematic procedure for identifying and evaluating the significance of effects from multiple activities. The analysis of the causes, pathways and consequences of these effects is an essential part of the process.

Cumulative (including additive, neutralising and synergistic) effects have been considered throughout the entire SEA process, as described below:

- Identification of key environmental issues as part of the review of relevant strategies, plans and programmes and baseline data analysis.
- Establishing the nature of likely cumulative effects, causes and receptors.
- Identifying key receptors in the process of collecting baseline information and information on how these have changed with time, and how they are likely to change without the implementation of the DP.
- The development of SEA objectives and assessment aid questions has been influenced by cumulative effects identified through the process above and SEA objectives that consider cumulative effects have been identified.

The results are presented in Chapter 11 of this report.

## **Monitoring the effects of the Drought Plan implementation**

The SEA has indicated a series of possible monitoring indicators that could be implemented through the Drought Plan.

It is anticipated that the monitoring programme will cover significant environmental effects and which will involve measuring indicators that will enable the establishment of a causal link between the implementation of the Drought Plan and the likely significant effects (both positive and negative) being monitored. This will allow identification at an early stage of unforeseen adverse effects and allow appropriate remedial action to be undertaken.

The monitoring indicators are presented in Chapter 12 of this report.

## **Stage C – Preparing the SEA Report**

This SEA Environmental Report has been prepared to accompany the draft Drought Plan on consultation.

## **Stage D - Consulting on the draft Revised Drought Plan and SEA Report**

### **Assessing significant changes**

The SEA Environmental Report will be published for formal consultation with the Draft Drought Plan. The results of the formal public consultation exercise may well result in changes to the Draft Drought Plan and these will have implications for the SEA Environmental Report. In addition, the consultation exercise may result in direct changes to the contents of the SEA Environmental Report. These will be reported in the Post Adoption Statement.

### **Post Adoption Statement**

Following completion of the public consultation and adoption of the Final Drought Plan, a statement (separate document) will be prepared setting out the following:

- How environmental considerations have been integrated into the plan, for example any changes to or deletions from the plan in response to the information in the SEA Environmental Report.
- How the SEA Environmental Report has been taken into account.



- How the opinions and consultation responses have been considered and addressed. The summary should be sufficiently detailed to show how the plan was changed to take account of issues raised, or why no changes were made.
- The reasons for choosing the plan as adopted in the light of other reasonable alternatives dealt with.
- The measures that are to be taken to monitor the significant environmental effects of implementation of the Drought Plan.

# 5. Review of relevant legislation and other Plans and Programmes

## 5.1 Introduction

The current draft Drought Plan updates Portsmouth Water's previous 2022 Drought Plan and aligns closely with the Company's Water Resource Management Plan that was published in October 2024 (WRMP24). WRMP24 set out a plan for a 50 year period (2025 to 2075) on how to meet the forecast demand for water. Drought Plan 2027 assesses the risk of supply-demand imbalance under more extreme but plausible droughts, to accommodate variations from the design conditions used in the WRMP.

The Drought Plan will both influence and be influenced by other plans, policies and programmes (PPPs) produced by local authorities, statutory agencies (at a national, regional and local level) and other bodies with plan making responsibilities. Legislation is a further driver that sets the framework for the Drought Plan, both directly and indirectly.

This interaction is reflected by the requirement of the SEA Regulations that information be provided on:

*"The relationship [of the plan or programme] with other relevant plans and programmes"*

*"The environmental protection objectives, established at international, [European] 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"*

Therefore, the SEA sets out the relationship between the Drought Plan and relevant legislation, other relevant plans and programmes and the environmental protection objectives established at international (European), national (UK wide), regional (taken for the purposes of this study to be the WRSE area) and local (local authorities within and immediately adjacent to the Drought Plan area) levels. This ensures that the SEA Objectives generally adhere to, and are not in conflict with, objectives found in other plans, programmes and legislation.

Those plans, programmes and legislation of particular note to the Drought Plan are listed in Appendix B. Appendix B provides an overview of each of the plans and programmes considered particularly relevant to the Drought Plan as well as detailing the anticipated implications for the SEA. A series of key generic themes which have emerged from the review are presented below.

### Air Quality

- Reduce emissions of NO<sub>2</sub>
- Increase use of low emission / zero emission at point of use vehicles
- Reduce emissions of PM<sub>10</sub> and PM<sub>2.5</sub>

### Greenhouse gas (GHG) Emissions

- Reduce GHG emissions, particularly CO<sub>2</sub>
- Maximise the use of renewable energy
- Increase energy efficiency and make use of new technology
- Minimise use of fossil fuels
- Contribute to the achievement of Net Zero Carbon



## Adaptation to a Changing Climate and Flooding

- Prepare for extreme weather events and sea level rise
- Minimise the risk and impact of flooding and droughts
- Avoid development in floodplains when possible
- Help meet objectives of Flood Risk Management Plans allowing for climate change

## Biodiversity, Fauna and Flora

- Protection of sites designated for nature conservation purposes
- Protect and enhance protected species, priority species, and priority and irreplaceable habitats
- Contribute to the delivery of biodiversity strategies and plans
- Increase and enhance priority and irreplaceable habitats
- Protect, maintain and where possible enhance natural habitat networks and green infrastructure, to avoid fragmentation and isolation of networks
- Contribute to the achievement of Biodiversity Net Gain

## Cultural Heritage

- Conserve and enhance the significance of designated and non-designated) heritage assets (including the contribution to significance made by their settings) and those of cultural note, including undesignated archaeological remains and historic landscapes
- Improve access to, and understanding and appreciation of the historic environment

## Water Resources

- Protect and improve the quality of ground and surface water
- Protect river flows and help to meet the conservation objectives of water dependent protected areas
- Help to meet objectives of the Water Framework Directive (WFD)
- Make use of Sustainable Drainage Systems (SuDS)

## Land Use, Soil and Agriculture

- Prioritise development on brownfield sites
- Seek to reclaim derelict and contaminated land
- Protect farmland and soils
- Change agricultural land use to forestry

## Landscapes and Townscapes

- Protect and enhance landscape and townscape character and local distinctiveness
- Protect tranquillity from the impacts of noise and light pollution
- Protect landscape quality

## Natural Resources and Waste

- Ensure efficient resource use and minimise resource footprint



- Use secondary and recycled materials
- Consider opportunities to maximise on-site re-use of materials
- Employ waste reduction methods to minimise construction and maintenance waste
- Reduce the amount of waste disposed of at landfill
- Promote circular economy
- Avoid the sterilisation of mineral resources

## Economic Themes

- Support local businesses
- Support enhancement of local economy and overall prosperity

## Health Themes

- Tackle poor health by protecting and improving the health of everyone, and of the worst off in particular
- Reduce health inequalities among different groups in the community (e.g. young children, pregnant women, black and minority ethnic people; older people, people with disabilities; low income households)
- Provide for an ageing population
- Promote healthy lifestyles through exercise, physically active travel and access to good quality and affordable food, which can assist in reducing both physical and mental illnesses

## Equality Themes

- Promote equality in the way services are planned, promoted and delivered;
- Treat everyone with dignity and respect
- Recognise people's different needs, situations and goals and remove the barriers that limit what people can do and can be
- Create sustainable communities which are active, inclusive, safe, fair, tolerant and cohesive
- Create sustainable communities which are fair for everyone - including those in other communities, now and in the future
- Improve economic, social and environmental conditions particularly in the most deprived areas
- Ensure fair access to and distribution of resources across the community, including rural areas
- Create a sense of belonging and wellbeing for all members of the community

## Cross cutting

- Support the Environment Act 2021 and the Environmental Improvement Plan 2023. The Environment Act 2021 made provision for legally binding targets, plans and policies for improving the natural environment. This includes air quality, biodiversity, water, waste reduction and resource efficiency. The Act requires 5 yearly review of the Government's 25 Year Environment Plan. The first review was published on 31 January 2023 as the Environmental Improvement Plan 2023. This sets a comprehensive delivery framework for the Environment Act targets and includes interim targets to ensure progression towards them. Key targets from the above include the following:
  - Halt the decline in species abundance by 2030 (EA21)
  - Improve the Red List Index for England for species extinction risk by 2042, compared to 2022 levels (EA21)



- Reaching or exceeding objectives for rivers, lakes, coastal and ground waters that are specially protected, whether for biodiversity or drinking water as per our River Basin Management Plans (25YEP)
- To restore or create 140,000 ha of a range of wildlife-rich habitats outside protected sites by 31 January 2028, compared to 2022 levels (EIP23)
- Restoring 75% of our one million hectares of terrestrial and freshwater protected sites to favourable condition, securing their wildlife value for the long term (25YEP)
- 50% of SSSIs to have actions on track to achieve favourable condition by 31 January 2028 (EIP23)
- Adhere to Portsmouth Water's commitment to becoming operational net zero carbon by 2030 in line with the Public interest Commitment made by all English water companies.



# 6. Baseline information and key environmental issues

## 6.1 Introduction

In order to assess the potential sustainability effects of the Drought Plan on the Portsmouth Water area of responsibility and surrounding areas, it is necessary to establish a baseline against which predicted effects can be assessed, and then to identify issues and trends that are related to each of the environmental and social (population) interests that may be affected by, or affect, the proposed plan. This is in keeping with the SEA Regulations which state that the Environmental Report should provide information on:

*"The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme" and "The environmental characteristics of areas likely to be significantly affected"* (Schedule 2)

And

*"Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC on the conservation of wild birds and the Habitats Directive"* (Schedule 2).

To accurately predict how Drought Plan proposals will affect the environmental characteristics, it is important to understand the current state of the environment and then examine the likely evolution of the environment without the implementation of the plan.

## 6.2 Data Collection Methodology

The most efficient way to collate relevant baseline data is using indicators. This ensures that the data collation is both focused and effective. The identification of relevant indicators has taken place alongside the assessment of other relevant plans, policies and programmes, the identification of environmental sustainability issues and development of the SEA framework.

The baseline information in this chapter was collected from published sources, including but not limited to the following sources:

- Office for National Statistics (ONS);
- Local Authority Health Profiles (Public Health England, 2018);
- UK Climate Projections 2018 (UKCP18);
- Historic England;
- Natural England;
- Department for Environment, Food and Rural Affairs (Defra);
- Environment Agency;
- Joint Nature Conservation Committee (JNCC);
- RSPB;
- Public health England;
- Consumer Data Research Centre (CDRC) Mapmaker;



- Letsrecycle.com;
- Energy Network Association;
- South East Waste Planning Advisory Group (SEWPAG);
- Ministry of Housing, Communities and Local Government;
- United Nations Educational, Scientific and Cultural Organisation (UNESCO);
- Department for Culture, Media and Sport; and
- National Landscapes Association.

References to all relevant baseline information is provided in the supporting Appendices document (Appendix C).

It should be noted that the SEA process does not require the collection of primary data, but relies on the analysis of existing information. As such, where data gaps exist this is highlighted in this report.

Indicators have been selected for their ability to provide objective data that will, over time, offer an insight into general trends taking place. Throughout the assessment process the following issues will need to be addressed:

- What is the current situation, including trends over time?
- How far is the current situation from known thresholds, objectives or targets?
- Are particularly sensitive or important elements of the environment, economy or society affected?
- Are the problems of a large or small scale, reversible or irreversible, permanent or temporary, direct or indirect?
- How difficult would it be to prevent, reduce or compensate for any negative effect?
- Have there been, or will there be, any significant cumulative or synergistic effects over time?

This SEA has drawn primarily on high-level, publicly available datasets to establish the environmental baseline because this approach is considered proportionate and appropriate to the strategic nature of the assessment. The datasets used to form environmental baseline are presented in Table 6-1. SEA is intended to inform high-level plan-making rather than detailed project design, and therefore it requires a broad understanding of environmental conditions and trends rather than fine-scale site-specific data. National and regional datasets provide consistent, authoritative, and regularly updated information across the full plan area, ensuring that the baseline is sufficiently robust to identify key environmental sensitivities, pressures, and opportunities at the plan level. Use of publicly available datasets also supports transparency, replicability, and alignment with good practice guidance, while avoiding disproportionate data collection efforts that would exceed what is reasonable for a strategic-scale assessment. It is however the expectation that further detailed data will be used at the individual option design stage, for example the use of Historic Environment Records held by Local Authorities.

**Table 6-1 - Datasets used in Environmental Baseline**

<b>Topic</b>	<b>Environmental datasets used to form environmental baseline</b>
1. Biodiversity	SAC, SPA, Ramsar, Marine Protection Areas/Marine Conservation Zones, SSSI, SSSI Impact Risk Zones, NNR, LNR, Ancient Woodland, Local Wildlife Sites, Priority Habitat, Nature Improvement Areas, National Priority Focus Areas, RSPB Reserves, Woodland Priority Habitat, Local Nature Recovery Strategy
2. Cultural heritage	Grade I, II, II* Listed Structures, Grade I, II, II* Registered Parks and Gardens, Protected Wreck, Registered Battlefields, Scheduled Monuments, Conservation Areas, World Heritage Sites, Heritage at Risk



3. Landscape	National Landscapes (formerly AONBs), National Landscape Character Areas, Woodland, Urban grade Agricultural Land, Green Belt, National Parks
4. Air quality	Air Quality Management Areas, Noise Action Planning Important Areas, Air Quality monitoring points and data
5. Community health and wellbeing	Allotments or Community Growing Spaces, Borough, Bowling Green, Cemetery, Country Parks, Golf Course, Medical facilities, National Parks, National Trails, Indices of Multiple Deprivation, Population and Migration Projections, Local Authority area profiles (NOMIS and Public Health England information)
6. Geology and soils	Agricultural Land Classification, Geologically designated SSSIs, EA Special Sites
7. Water quality and resources	Source Protection Zones, Groundwater Vulnerability Zones, Drinking Water Safeguard Zones, WFD Groundwater status, Main Rivers, Surface Water Features, Bathing Waters, Shellfish Waters, Catchments and River Basins, Geomorphology
8. Flood risk	Flood Zones, Flood Alert/Warning Areas, EA Flood Defences
9. Infrastructure / material assets	Open access areas, Other Sports Facility, Play Space, Playing Field, Public Park Or Garden, Registered Common Land, Religious Buildings, Religious Grounds, Schools, Tennis Courts, Transport Route Major Roads, Railway tracks, Nationally designated cycle routes, National Grid Infrastructure (high voltage electricity lines and substations), Authorised and Historic Landfill sites

Since SEA is an iterative process, subsequent stages in its preparation and assessment might identify other issues and priorities that require the sourcing of additional data and/or information and identification of monitoring strategies. This makes the SEA process flexible, adaptable and responsive to changes in the baseline conditions and enables trends to be analysed over time.

## 6.3 Data Analysis

Data have been collated and analysed for the following indicators (as detailed in Appendix C):

### Environmental data

- CO<sub>2</sub> emissions
- Climate change
- Local air quality
- Noise / Light pollution ('Tranquillity')
- Biodiversity, fauna and flora (including designated sites)
- Landscape and townscape
- National Character Areas
- Heritage assets
- Green space
- Soil / land classification
- Water quality
- Flooding



- Waste and resources

### **Economic data**

- Employment
- Long term trends in Gross Value Added (GVA)
- Long term trends in population
- Economic sectors, including those related to rural output
- Performance gap and sub-regional performance
- Identification of economic centres

### **Social data**

- Population and diversity
- General health statistics
- Accessibility
- Multiple deprivation

The baseline data provide an overview of the environmental characteristics of the Drought Plan area. This overview, together with contextual information, is presented in Appendix C. The analysis of the baseline has highlighted a number of key issues across the Portsmouth Water plan area. These, together with implications and opportunities arising for the Drought Plan, have been summarised in Table 6-2.

## **6.4 Future Baseline**

The SEA Regulations require that “the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the Plan or Programme” is identified. Prediction of future trends depends on a wide range of global, national and regional factors and decision making. Key trends have been identified as part of the analysis of key issues and opportunities in Chapter 6.6.

## **6.5 Data Limitations**

It is believed that the data sets available provide a comprehensive overview of the environmental and social situation across the Portsmouth Water area of responsibility and the wider region. It should however be noted that much of the baseline environmental information used in this SEA is drawn from publicly available datasets, for example open-access GIS layers. While these sources are authoritative, they may not always reflect the most up-to-date conditions or recent local changes.

Its should also be noted that Portsmouth Water are currently undertaking detailed analysis of current and future abstraction impacts as part of their AMP8 WINEP investigation programme using numerical regional groundwater and hydroecological models. The results of these investigations are not yet available, but it is the expectation for the results to inform future drought plan and drought permit refinement and mitigation measures.

Not all drought management options have detailed spatial or operational data available. Where information on location, magnitude, or timing of implementation is limited, the SEA has applied proportionate, precautionary, and qualitative assessment methods. See further detail provided in Chapter 9.2.



The certainty of predicted environmental effects associated with a drought permit is inherently limited, and this constraint is reflected in the SEA. For example, a drought permit is an emergency, reactive measure whose implementation depends on the specific hydrological, climatic and operational circumstances at the time of a drought. It is however considered that the proposed methodology is precautionary and as robust as possible given the uncertainties over timing of implementation, duration and intensity of potential abstraction changes.

## 6.6 Key Environmental Issues

The SEA Regulations state that the Environmental Report should provide information on:

*"Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC on the conservation of wild birds and the Habitats Directive."* (Schedule 2)

The key environmental issues have been identified from the review of baseline information and other plans and programmes. These key issues are summarised in Table 6-2 below. This table also provides a discussion on the implications/opportunities of such issues to the Drought Plan and provides clear links to the proposed SEA objectives. The analysis of key sustainability issues has influenced the development of the SEA framework (see Section 8), in particular in formulating decision making questions.

It is the role of the SEA to consider all significant environmental effects, this includes taking potential opportunities to enhance the environment where possible. As such it is important that the SEA considers all such opportunities even though at this stage of plan development it is unclear whether such opportunities can be realised.

It should be noted that a drought plan is an operational plan that sets out the actions Portsmouth Water will take before, during and after a drought to maintain a secure supply of water. This includes prioritising actions that save water before taking more water from the environment, including managing leakage and outage, such as water loss from maintaining company assets, reducing mains pressure or water efficiency campaigns. These measures are considered to provide opportunities to not only 'protect' but to also 'enhance' the environment (for example by retaining water in the environment) in line with current legislation and as such Table 6-2 reflects these opportunities. Like any plan, not all measures will provide the same opportunity for environmental enhancement (for example drought permits), but the SEA will consider the Plan as a whole and ensure appropriate consideration throughout option development.

It is also to be noted this plan is largely concerned with water management (albeit in a particular scenario). Therefore, it is anticipated that a number of the Drought Plan actions are also likely to be contained within, and sit alongside, the WRMP24. The opportunities and SEA objectives developed for the Drought Plan broadly align to those of WRMP24 to ensure a consistent and robust approach.

There is already a wealth of environmental baseline information, for example existing and updated Environmental Assessment Reports (EARs) that can be used to inform the SEA. Further to this, Portsmouth Water also carry out a suite of monitoring, as part of their Environmental Destination and PR24 Water Industry National Environment Programme (WINEP), that has been further used to inform this SEA assessment. Monitoring to inform WINEP and Environmental Destination is still ongoing, but information will be used to inform the SEA as and when it becomes available.



**Table 6-2 - Key Issues, Implications and Opportunities for Portsmouth Drought Plan**

Key Environmental Issue	Implications / Opportunities for the Drought Plan	SEA Objective
<p><b>Biodiversity</b></p> <p>Within the South East region, there are a wide range of sites designated for nature conservation. Of note, there are 16 Ramsar sites, 23 Special Protection Areas, 55 Special Areas of Conservation and 708 Sites of Special Scientific Interest.</p> <p>Specifically, within the Portsmouth Water Plan area there are:</p> <ul style="list-style-type: none"> <li>▪ <b>Four Ramsar Sites</b> (Solent and Southampton Water, Pagham Harbour, Portsmouth Harbour and Chichester and Langstone Harbours)</li> <li>▪ <b>Five SPAs</b> (Portsmouth Harbour; Pagham Harbour; Chichester and Langstone Harbours; Solent and Dorset Coast; and Solent and Southampton Water SPA);</li> <li>▪ <b>Six SACs</b> (Butser Hill; Solent Maritime; Rook Cliff; Singleton and Cocking Tunnels; Kingley Vale; and Solent and Isle of Wight Lagoons SAC); and</li> <li>▪ 41 SSSIs.</li> </ul> <p>There are also two Marine Conservation Zones (MCZs) (Selsey Bill and the Hounds and Pagham Harbour) within/adjacent to the Plan Area.</p> <p>Within the South East region, 37 National Nature Reserves and 302 Local Nature Reserves can be found. Within the Portsmouth Water Plan area there are five NNRs and 29 LNRs. Key pressures and risks in respect of biodiversity and nature conservation that are particularly relevant have been identified from air pollution and climate change, which can change distribution of species and habitats.</p> <p>Areas of Ancient Woodland, i.e. those areas that have been continuously wooded since at least 1600AD are scattered across the South East region. The Ancient Woodland Inventory for England identifies approximately 1,100 sites of Ancient Woodland, within the Plan area.</p>	<p>The Drought Plan should aim to protect and enhance all sites of biodiversity importance and should place a particular emphasis on protecting sites designated for nature conservation and geodiversity purposes.</p> <p>Consideration should be made of protected and priority species and their habitats, including local wildlife sites, as well as consideration of issues such as Suitable Alternative Natural Greenspace.</p> <p>Potential opportunities for new habitat creation and enhancement associated with water resources should be explored, where appropriate. There should be achievement of Biodiversity Net Gain in areas not formally designated, recognising that a target of 10% has been set out in the Environment Act 2021 for new development. Habitat creation and enhancement may provide opportunities to contribute to the Local Nature Recovery Strategy.</p> <p>The Drought Plan should avoid the fragmentation of green infrastructure, by seeking the integration and enhancement of the green infrastructure network to contribute to protecting natural habitats and delivering biodiversity net gain through all new developments.</p> <p>The Drought Plan should help create cohesive habitat networks to help habitats and species adapt to the consequences of climate change, in particular. Consider the support of water-dependent designated sites and priority habitat/species to adapt to climate change more specifically. There are also potential opportunities for increased resilience of species and habitats to climate change and drought more generally.</p> <p>The Drought Plan should promote the increased accessibility to appropriately designed multi-functional green infrastructure</p>	<p>To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain</p>



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There are other priority habitats within the plan area that fall inside and outside of designated sites which are likely to be impacted by the Drought Plan. Examples include fen, wet heath, wet woodlands, reedbeds, wet grazing marsh etc. There are also unique flushes and seepages which are reliant on the chalk aquifers.

Key pressures on biodiversity include the influences of air pollution and climate change. Additional pressures relevant to drought planning include:

- Habitat fragmentation, direct loss, disturbance and damage, including the drying of habitats leading to ecological fragmentation.
- Effects on species' movement, range, food availability, reproduction, and altered ecological interactions such as predation and competition, all of which may influence long-term species survival.
- Increased likelihood of algal blooms, and the spread or establishment of invasive or drought-tolerant species, particularly under sustained low-flow or elevated-temperature conditions.
- Deterioration in water quality, including reduced dissolved oxygen and increased water temperatures, which can affect aquatic communities and dependent species.

Drought conditions can place significant stress on aquatic and riparian habitats, so monitoring ecological responses in watercourses is important. There is also an opportunity to encourage nature-based solutions that support habitat resilience, reduce fragmentation and aid species recovery during and after drought.

Across all designations, baseline evidence indicates that a substantial proportion of biodiversity sites are in unfavourable or recovering condition, with some showing signs of decline. This reduced ecological resilience increases their sensitivity to drought pressures and highlights the importance of safeguarding these sites during Drought Plan implementation.

which can play a significant role in diverting pressure away from more sensitive sites or areas.

In parallel with the SEA of the Plan, HRA is being undertaken which will identify the European sites, and where possible establish the likelihood of impacts on the integrity of these sites and identify appropriate avoidance and mitigation measures early in the development of the Plan.

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**Likely evolution of the baseline**

Habitats and species are likely to continue to be protected through European and UK legislation. Climate change will however likely result in decline of some habitats and species, though may afford opportunities for other species, including invasive species.

England's wildlife habitats have also become increasingly fragmented and isolated, leading to declines in the provision of some ecosystem services, and losses to species populations'.

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**Soil**

There are a mix of land uses across the Portsmouth Water Plan area, ranging from rural areas of open countryside or arable farmland and pasture to extensive heavily urbanised. There are also areas of suburban and urban fringe associated with the main towns and distinct pockets of 'isolated' urban development in the form of villages and small towns.

Soils in England are already, and continue to be, degraded by human activity including intensive agriculture, historic levels of industrial pollution and urban development, making them vulnerable to erosion (by wind and water), compaction and loss of organic matter. Large swathes of the Plan area comprise Grades 3 and 4 under the Agricultural Land Classification. Large areas of Grade two persist towards the coast and 'non-agricultural' and 'urban' areas align with urbanised areas. Many areas of land in the UK have been contaminated by past industrial and other human activities, including former factories, storage depots and landfills. Land at the full range of potentially contaminated sites could be contaminated by a wide range of harmful substances such as oils and tars, heavy metals, asbestos and chemicals. By its nature, it is often very difficult to know where land has been contaminated previously or is currently suffering ongoing contamination. As such the number of known sites of contamination is likely to be only a very small fraction of the overall number of potentially contaminated sites.

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**Likely evolution of the baseline**

Soil is a non-renewable resource and is vulnerable to erosion, degradation and contamination. In addition, historic land uses have contributed to contamination across large areas.

Measures within the Drought Plan, where appropriate, should seek to make best use of areas that are already urbanised and provide an opportunity for regeneration / improvements to land quality. Where use of agricultural land is unavoidable, measures should be taken to avoid those areas of the highest quality and aim to protect soil and agricultural holdings through avoidance of impacts such as erosion, contamination or severance.

The Drought Plan must protect soils as they are essential for achieving a range of important ecosystem services and functions.

The Drought Plan should seek to avoid land that is covered by Mineral Safeguarding Area designations, to prevent the sterilisation of key mineral resources.

To protect and enhance the functionality, quantity and quality of soils

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Declining - it is likely that greenfield sites will experience increasing pressure for development in preference to the complexities of redeveloping previously developed and potentially contaminated sites. This could reduce available high quality soil resources and fail to realise the potential of existing capacity within existing urban and previously developed areas. Remediation of contamination is likely to remain sporadic and reflective of individual site requirements

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## Water

There are considerable pressures on water resources with resulting major impacts on many of the waterbodies across the UK. For the purposes of taking a holistic approach to management of water resources and to address the pressures on the water environment, under the Water Framework Directive (WFD), the UK has been divided into a series of 10 River Basin Districts (RBD). Those of relevance to the Portsmouth Water Plan area are:

- South East

There are 282 surface water bodies within the South East RBD.

As with most water bodies in England, there are a range of significant water management issues manifested in these RBD. For the South East River Basin District, the following were identified as significant issues<sup>6</sup>:

- Abstraction and other artificial flow regulation
- Nitrate
- Organic Pollution (ammonia and biochemical oxygen demand)
- Pesticides
- Phosphorus

Groundwater provides a third of drinking water in England, and it also maintains the flow in many rivers. In some areas of Southern England, groundwater supplies up to 80% of the drinking water. Protecting these

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The Drought Plan should seek to implement and maximise opportunities to improve waterbody status. This may be achieved by carefully monitoring and managing abstractions and recharges from/to surface and groundwater bodies and measures to reduce the need for, or severity of, drought permit(s).

The Plan should seek to avoid over-abstraction of both surface water source and groundwater sources. Climate change is likely to affect future availability of water in the region.

To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies

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<sup>6</sup> [Annex 4 : Pressures and risks to the water environment \(publishing.service.gov.uk\)](#)



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sources (along with any private water supplies) will help ensure that water is safe to drink.

In order to help protect sources, Source Protection Zones (SPZs) for groundwater sources such as wells, boreholes and springs used for public drinking water supply have been defined. 24 DWSZ fall entirely or partially within the plan area.

Similarly, parts of the country at which there is increased risk of contamination to groundwater supplied from activities which might cause pollution are covered by Source Protection Zones (SPZs). There are several SPZs noted within the Portsmouth Water Plan area.

### ***Likely evolution of the baseline***

Maintained and improving - Surface and groundwater quality is predicted to increase through legislation such as WFD, though significant challenges remain as noted in the River Basin Management Plan.

The region is already water-stressed and projected economic and population growth will likely place further pressure on the region's water resource quantity (surface and groundwater) and water resource dependent environments.

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### **Air**

Air pollution impacts on public health, the natural environment and the economy.

Air quality has improved in the UK over the last sixty years as a result of the switch from coal to gas and electricity for heating of domestic and industrial premises, stricter controls on industrial emissions, higher standards for the composition of fuel and tighter regulations on emissions from motor vehicles.

Poor air quality is generally associated with urban/industrial areas and major road infrastructure and this is reflected in the typical location for Air Quality Management Areas (AQMA), many of which have been designated due to high NO<sub>2</sub> and PM<sub>10</sub> levels. A high proportion of the local authorities which fall within the South East region contain at least one AQMA (126 AQMAs in total) and are predominately designated for

The Plan should aim to protect and enhance air quality where possible. It should seek to support strategies that aim to reduce air pollution.

Electrifying fleet vehicles and treatment works would also act to support reducing air pollution.

Interactions between hosepipe and irrigation bans and elevated risk of dust pollution should be considered, particularly in areas where there are nearby vulnerable receptors such as hospitals.

Noise emissions should also be considered as these can impact on the wellbeing of the population.

To reduce and minimise air and noise emissions.



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Nitrogen Dioxide (NO<sub>2</sub>) and Particulate Matter (PM<sub>10</sub>). There are six AQMAs declared within the Portsmouth Water Plan area.

133 Noise Action Important Areas have been identified within the plan area. The source of noise in these areas is predominately roads, with the exception of a small number in which the source is rail.

***Likely evolution of the baseline***

Improving - At the national level air quality is generally improving as industrial practices, energy sources and tighter environmental legislation have contributed to reductions in pollutants.

While air quality is generally improving at a national level, new development, economic growth and tourism may lead to increased car journeys and congestion could lead to localised air quality effects.

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**Greenhouse gas emissions**

Based on the local authorities which intersect the Portsmouth Water Plan area, the total carbon dioxide (CO<sub>2</sub>) emissions for 2022 across all sectors is estimated at 3760.3 ktCO<sub>2</sub>.

Portsmouth is identified as having the highest emissions of all relevant LAs.

Portsmouth Water abstract, treat and pump an average of 175 million litres of water each day. Each million litres of water produces around 95kg of carbon dioxide equivalent emissions. Portsmouth Water currently produce around 16 tonnes of CO<sub>2</sub>e each day through daily operations.

***Likely evolution of the baseline***

Carbon and other GHG emissions will continue to be emitted, however regulations and government legislation and incentives will continue to promote the reduction in emissions through national commitments to net zero by 2050. Portsmouth Water have been early adopters of solar power, which since installation in 2011 has saved 800 tonnes of CO<sub>2</sub>e emissions. Portsmouth Water anticipate reaching a net-zero operational emissions target by 2030.

The Plan must work to minimise water demand from households and businesses as this will result in reduced need to abstract, treat and transport water (and also less wastewater to treat) and consequently lesser carbon emissions.

The options within the Plan have the potential to result in carbon emissions during the construction and operation phase which will further contribute to climate change. The impact of such emissions should be considered through the optioneering and design processes.

Options within the Plan have the potential to impact areas which are beneficial for carbon sequestration such as peatlands.

To achieve Portsmouth Water's target of reducing operational carbon emissions to Net Zero by 2030 and contribute to national target of Net Zero by 2050.



There is potential for an increased need for wastewater treatments as a result of WFD water quality standards combined with population increase. Given the energy intensity of wastewater treatment, the water industry CO<sub>2</sub> emissions may increase as a result of increased water consumption leading to increased volumes of wastewater requiring treatment and further contribute to climate change.

**Adaptation to a changing climate**

Current observations indicate that the UK is continuing to warm. In 2019, four new temperature records were set, including a high of 38.7°C and a new winter record of 21.2°C. The decade between 2010 and 2019 has been on average 0.3°C warmer than the 1981-2010 average and 0.9°C warmer than 1961- 1990. Annual precipitation has increased across the UK in the last few decades with 2019 seeing 107% more rainfall than the 1981-2010 average. Summers have been 11% wetter on average than 1981- 2010 and 13% wetter than 1961-1990. Winters have been 4% and 12% wetter than 1981-2010 and 1961-1990 respectively. These general trends have also been witnessed in the Portsmouth Water area.

**Likely evolution of the baseline**

The climate is expected to continue to change with annual average temperatures projected to increase, particularly in summer. Winters are projected to be wetter and summers drier. Climate change is projected to result in more extreme weather events, potentially causing or exacerbating periods of drought which alongside population and economic growth will impact water availability.

There is also a need to manage risks related to periods of limited water availability. It is possible limitations of abstraction could mean water infrastructure may have to cease to operate for periods of time and abstraction could cause environmental damage, including for sites with legal habitats and water protections (e.g. SSSIs, SACs, Water Framework Directive etc.).

There are multiple benefits associated with the use of nature based solutions to reduce drought vulnerability such as tree planting or peat restoration. Periods of drought should be considered in any design and the implementation of multi functional green infrastructure including SuDS and other similar appropriate measures or new approaches should be considered and encouraged where feasible. This should include Natural Flood Management and other means of increasing flood storage capacity to help maintain water in the catchment.

To reduce vulnerability of built infrastructure to climate change risks and hazards

To reduce or manage drought risk, taking climate change into account

**Landscapes**

The South East region’s landscape is diverse and there are important landscapes within the region, including two National Parks, eight National Landscapes and 29 National Character Areas (NCAs).

Specifically within the Plan area there is/are:

Opportunities for landscape enhancement should be explored, e.g. through sympathetic design, enhancements to existing landscape improvement areas and new planting opportunities associated with water infrastructure provision. Where any water infrastructure scheme would involve physical development within a Conservation Area or a wider area for which a townscape/urban character appraisal has been undertaken, the

To conserve, protect and enhance landscape, townscape and seascape character and visual amenity



- One National Park (South Downs National Park, designated for its rolling hills, picturesque towns and villages, and dramatic cliffs)
- One National Landscape (Chichester Harbour); and
- Five NCAs (Hampshire Downs; Wealden Greensand; South Downs; South Coast Plain; and South Hampshire Lowlands).

There are a range of pressures on landscape, many of which are altering landscapes in a direction which could be regarded as inconsistent with the traditional landscape vernacular of the area. These changes are a reflection of the fact that the landscape of the UK has changed over many years due to a range of issues such as urbanisation, changes to agriculture, reduced tranquillity, loss of habitats and forests, etc. In an effort to preserve the best landscapes a series of National Parks and National Landscapes were designated.

Within the Plan area there are 122 designated Conservation Areas, the first areas designated in 1969, with the most recent being 2005, covering a range of building characters and reflecting a diverse array of architectural styles.

***Likely evolution of the baseline***

Stable - Many of the region's most exceptional landscape and townscapes benefit from protection through designations that will persist in the absence of the Drought Plan. In general terms, modern design / landscaping principles and interested parties expectations are promoting a renewed focus on the quality of scheme design and this trend is likely to continue, though risks from increased urbanisation and infrastructure development remain.

design of the scheme should take account of relevant guidance for the Conservation Area / townscape character area.

**Cultural Heritage**

There are two World Heritage Sites within the South East Region, and none falling within the Plan Area. There are however a wide range of other historic and cultural heritage features located across the Plan area and which span the full range of human settlement, from the prehistoric to the present. These include Scheduled Monuments, Registered Parks and

The Drought Plan should aim to protect and preserve designated and non-designated heritage assets and their contexts and settings.

The Drought Plan has the potential to directly or indirect impact the historic environment through effecting the asset's fabric or setting. It is to be noted that some heritage features can be affected by changes to hydrological conditions.

To conserve, protect and enhance the historic environment and assets, including archaeology



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Gardens and Listed Buildings. Numbers of sites within the Plan area are as follows:

- Listed Buildings – 3840 (90 Grade I, 3,569 Grade II and 180 Grade II\*)
- Registered Parks and Gardens – 14 (one Grade I, eight Grade II and five Grade II\*);
- Scheduled Monuments – 179;
- Historic Battlefields – none; and
- Conservation Areas – 122.

49 of these sites are identified on the Heritage at Risk Register.

There are also non-designated heritage assets in the Plan Area. These are locally-identified ‘buildings, monuments, sites, places, areas or landscapes identified by plan making bodies as having a degree of heritage significance meriting consideration in planning decisions but which do not meet the criteria for designated heritage assets’.

It is important to note that the nature of cultural heritage features means that not all are known at present; in particular, buried archaeological remains.

#### ***Likely evolution of the baseline***

Stable / Declining - Historic England reported that in 2024, whilst the total number of entries on the Heritage at Risk Register increased, 124 assets were removed for positive reasons. Designated heritage assets benefit from protection that will continue without the Drought Plan. However, there is a risk of uncoordinated and piecemeal development resulting in the successive erosion of the quantum and integrity of the region’s cultural heritage resource.

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#### **Population and Human Health**

There are approximately 9.3 million people living within the South East Region, which accounts for 16% of the UK’s population.

Within Portsmouth City there are approximately 210,300 people.

Infrastructure should be sensitively designed to be sympathetic to existing character and quality and opportunities for improving settings should be examined.

Where schemes would involve physical development that could affect previously undiscovered archaeological assets the design of the scheme and site selection should be informed by early investigation of the potential archaeological interest of the affected land.

Drought represents a considerable risk to population and human health that will be exacerbated by factors including population growth, ageing age profile and climate change. It is essential the plan takes affirmative steps to counter the effects

To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing



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Portsmouth Water supply a domestic population exceeding 754,000. Population is expected to grow which will likely place additional pressure on the water environment within the Plan area. Economic growth and climate change will also add to this pressure.

Potential options within the Drought Plan have the potential to result in temporary disturbance effects during the construction phase. There is also potential for impacts on the water or natural environment which could have impacts on recreation and wellbeing.

**Likely evolution of the baseline**

Stable / Uncertain – Population is projected to increase in the region and life expectancy is also higher than the national average meaning that the numbers of elderly residents are likely to increase. As such, water demand will increase, and further pressure will be placed on water resources within the region.

Water available for consumptive use may also be affected by climate change whereby access to water is limited. Climate change may manifest through more frequent droughts or floods.

**Material Assets**

Within the UK, the south east is the most populated region with a population of approximately 9 million and expected long-term growth. Settlements within the Plan area are diverse and range from large population centres to small rural hamlets and seaside towns.

Key Urban areas within the Portsmouth Plan area include:

- Chichester population of 29,425
- Havant population of 124,185
- Clanfield population of 6,015
- Bognor Regis population of 25,011
- Southbourne population of 6,385
- North Mundham population of 1,789
- Bishops Waltham population of 6,955

of such factors and minimise as far as reasonably practical the risk of drought events impacting on water supply.

The Drought Plan also has the opportunity to ensure a resilient and reliable potable water supply for customers now and in the future, through continuing to increase awareness of water conservation and adapting to climate change so that there is enough water for a growing population and to support economic growth.

Opportunities to improve public access and engagement with natural environment should be considered where possible.

The Drought Plan has the opportunity to consider the efficiency in the use of resources within the option development and reduce the use of energy, materials and prevent waste generation through the promotion of low/zero carbon energy, use of recycled or secondary materials and furthering concepts of circular economy.

To minimise resource use and waste production

To avoid negative effects on built assets and infrastructure



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Portsmouth Water supply a domestic population of around 754,000 as well as industry, large defence establishments and varied commercial businesses

In terms of infrastructure, the South East region contains over 400 authorised landfill sites. 13 authorised landfill sites and 221 historic landfill sites are identified within the Plan area. While there are no gas terminals or pipelines within the Plan area, Lovedean electrical substation is within the Plan area situated west of Horndean and the A3 motorway. From the substation extent four 132Kv and 400Kv overhead lines which traverse the Plan area north, east and west / south west.

There are a number of railway tracks within the plan area connecting areas such as Chichester and Littlehampton, Fareham and Portsmouth and Petersfield and Havant.

Portsmouth Port or Portsmouth Continental Ferry Port is a cruise, ferry and cargo terminal located in the city of Portsmouth.

***Likely evolution of the baseline***

Regeneration and future investment and demand are likely to increase the number and quality of material assets such as housing, transport infrastructure, waste facilities, and community facilities. Portsmouth Port is anticipated to expand with over £33 million worth of investment earmarked from 2019. The expansion works are anticipated to lead to an increase in the number of cruise passengers at the Port from 50,000 to 15000. Of the investment £15 million is anticipated to be invested in improving facilities at Portico who operate two commercial quays within the Port

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# 7. SEA Framework

## 7.1 Introduction

In order to follow good practice in sustainability appraisal, a number of bespoke sustainability objectives have been developed for the SEA. These SEA objectives reflect the sustainability objectives the Drought Plan should be aiming to achieve and the areas of sustainability that the Drought Plan is expected to impact upon or have an influence on. The expectation is that even though some objectives may not be within the Drought Plan's direct remit, the Drought Plan should be able to influence the direction of change through setting out clear policies and approaches which could inform the work of Portsmouth Water, partners and other stakeholders.

## 7.2 Assessment Framework

The SEA Framework is a key component in completing the SEA, through providing a set of SEA objectives against which the performance of the Drought Plan can be predicted and evaluated.

The SEA objectives for the Drought Plan have been worded so that they reflect one single desired direction of change for the theme concerned and do not overlap with other objectives. They include both externally imposed social, environmental and economic objectives as well as others devised specifically in relation to the context of the Drought Plan. It should be noted that, from an assessment perspective, all SEA objectives are considered equally important to be achieved by the Drought Plan and that there is no inherent prioritisation of objectives. The ultimate aim is for the Drought Plan to achieve net benefits across the three dimensions of sustainability (environmental, social and economic dimensions).

In order to assess how each aspect of the Drought Plan performs against each of the SEA objectives, a series of decision-making criteria / assessment aid questions have been developed. The decision-making criteria are a way of guiding the assessment. They are not the only considerations to be taken into account when determining likely effects arising from the Drought Plan, as it is unlikely that every relevant question can be known at this stage. But they do provide a useful starting point and a transparent structure to help demonstrate how the assessment of the effects arising from the implementation of the Drought Plan will be undertaken. As the SEA progresses, they will also help in the development of a set of indicators to be included in the monitoring programme at a later stage of the assessment process.

An SEA Framework of 11 objectives and associated decision-making / assessment aid questions has been drawn up, developed through the analysis of baseline information and identification of key sustainability issues and opportunities, as well as the review of relevant plans, policies and legislation. In addition, assessment aid questions have been identified to substantiate the proposed SEA Objectives.

The proposed SEA objectives and associated Assessment Aid Questions are presented in Table 7-1.

It is also to be noted that there is a certain degree of cross-over of Assessment Aid Questions within the SEA Framework i.e. the same question is asked across a number of Objectives. The rationale for this is that while the question may be the same, it is considered from a differing viewpoint and within a different context. This is the role of the Assessment Aid Questions i.e. to help consider all aspects of an Objective in arriving at an assessment of the performance.



**Table 7-1 SEA Framework**

SEA Topic	SEA objective	Decision aid questions
Biodiversity	To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain	<p>Will the drought plan:</p> <ul style="list-style-type: none"> <li>▪ Protect and enhance the conservation status of designated sites and their qualifying features (SPAs, SACs, Ramsar sites, MCZs, SSSIs, National Nature Reserves and Ancient Woodland)?</li> <li>▪ Have the potential to affect a habitat site? (taken from HRA results)</li> <li>▪ Affect, direct or indirectly, a priority habitat on the priority habitat inventory, including chalk rivers?</li> <li>▪ Protect and enhance priority habitats and species, including surface and ground water-dependent habitats and species and chalk rivers?</li> <li>▪ Affect freshwater or marine environment, habitats and species (including MCZs and MPAs)?</li> <li>▪ Provide opportunities to improve fish migration, or could migration be impeded?</li> <li>▪ Contribute to the loss or gain in habitat connectivity at local, regional and national scale?</li> <li>▪ Create or restore habitat delivering a 10% net gain for biodiversity?</li> <li>▪ Avoid the possibility for INNS to be spread/ introduced?</li> <li>▪ Create an opportunity to improve biodiversity value through removal of INNS?</li> </ul>
Soil	To protect and enhance the functionality, quantity and quality of soils	<p>Will the drought plan:</p> <ul style="list-style-type: none"> <li>▪ Affect high grade agricultural land?</li> <li>▪ Promote the efficient use of land?</li> <li>▪ Prevent soil erosion and retain soil stocks as a natural resource?</li> <li>▪ Involve use of brownfield or greenfield land?</li> <li>▪ Prevent mineral sterilisation?</li> <li>▪ Result in soil contamination or involve soil remediation?</li> <li>▪ Affect SSSIs of geological importance?</li> </ul>



Water	To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	<p>Will the drought plan:</p> <ul style="list-style-type: none"> <li>▪ Provide a reliable and sustainable water supply which meets changing demand?</li> <li>▪ Affect surface water quality or quantity?</li> <li>▪ Affect groundwater quality or quantity?</li> <li>▪ Affect estuarine or coastal water quality or quantity?</li> <li>▪ Affect bathing waters?</li> <li>▪ Affect shellfish water protected areas?</li> <li>▪ Slow the flow in upper catchments and reduce soil losses to river systems?</li> <li>▪ Support achievement of environmental objectives set out in River Basin Management Plans and Shoreline Management Plans</li> <li>▪ Protect and enhance the environmental resilience of the water environment to climate change?</li> <li>▪ Contribute to the achievement of WFD objectives?</li> </ul>
Air	To reduce and minimise air and noise emissions	<p>Will the drought plan:</p> <ul style="list-style-type: none"> <li>▪ Minimise air emissions (pollutants and noise) that affect human health and biodiversity?</li> <li>▪ Affect an existing air quality management area (AQMA) or lead to the creation of a new one?</li> <li>▪ Promote enhancements to green infrastructure networks to help improve air quality?</li> </ul>
Greenhouse Gas Emissions	To achieve Portsmouth Water's target of reducing carbon emissions to Net Zero by 2030 and contribute to national target of Net Zero by 2050	<p>Will the drought plan:</p> <ul style="list-style-type: none"> <li>▪ Reduce direct and indirect emissions of all greenhouse gases, including carbon dioxide, during construction, operation and decommissioning of schemes?</li> <li>▪ Maximise supply of energy from low carbon/renewable energy sources / use of low carbon/renewable energy?</li> <li>▪ Use negative carbon emissions technologies to offset residual emissions such as Nature Based Solutions?</li> <li>▪ Protect carbon sinks/removals through natural sequestration including that provided by green infrastructure and soils which contribute to carbon sequestration?</li> </ul>



Climate Factors	To reduce vulnerability of built infrastructure to climate change risks and hazards	<p>Will the drought plan:</p> <ul style="list-style-type: none"> <li>Manage the risks associated to periods of limited water availability during droughts over the lifetime of the infrastructure?</li> <li>Manage the risks associated with heatwaves and wildfires over the lifetime of the infrastructure?</li> <li>Increase resilience of water environment and its ecology to climate change, flood risk and drought?</li> </ul>
Landscape	To conserve, protect and enhance landscape, townscape and seascape character and visual amenity	<p>Will the drought plan:</p> <ul style="list-style-type: none"> <li>Protect and enhance designated landscapes and features?</li> <li>Affect the character of the landscape, townscape or seascape, including tranquillity and views?</li> <li>Protect conservation areas or historic landscape/townscape areas?</li> <li>Minimise noise and light pollution from construction and/or operational activities on residential amenity and on sensitive locations, receptors and views?</li> <li>Create or improve green infrastructure which contributes to the landscape?</li> </ul>
Cultural Heritage	To conserve, protect and enhance heritage assets and the historic environment, including archaeological remains	<p>Will the drought plan:</p> <ul style="list-style-type: none"> <li>Conserve or enhance designated heritage assets, sites and features and their settings?</li> <li>Conserve or enhance non-designated heritage assets and their settings?</li> <li>Protect heritage assets at risk?</li> <li>Protect important archaeological (including unknown archaeological remains)?</li> <li>Alter the hydrological conditions of water-dependent heritage assets, including organic remains?</li> </ul>
Population and Human Health	To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	<p>Will the drought plan:</p> <ul style="list-style-type: none"> <li>Minimise disturbance from noise, light, visual, and transport due to construction and operational activities?</li> <li>Minimise disturbance to active travel (pedestrian and cycle routes, Public Rights of Way) during construction and operational activities?</li> </ul>



		<ul style="list-style-type: none"> <li>▪ Secure resilient water supplies for the health and wellbeing of customers?</li> <li>▪ Will the Drought Plan impact economic activity, including important fisheries such as those used for tourism or recreation?</li> <li>▪ Impact the tourism industry?</li> </ul>
Material Assets	To minimise resource use and waste production	<p>Will the drought plan:</p> <ul style="list-style-type: none"> <li>▪ Minimise the use of materials, energy and resources?</li> <li>▪ Promote water efficiency and encourage a reduction in water consumption?</li> <li>▪ Minimise the production of waste?</li> <li>▪ Promote sustainable waste management practices in line with the waste hierarchy?</li> <li>▪ Encourage the use of recycled and / or secondary materials?</li> <li>▪ Promote the use of low carbon materials and technologies?</li> </ul>
	To avoid negative effects on built assets / infrastructure	<p>Will the drought plan:</p> <ul style="list-style-type: none"> <li>▪ Reuse existing infrastructure?</li> <li>▪ Affect major built assets and infrastructure, including transport infrastructure?</li> </ul>



# 8. Assessment of Alternatives

## 8.1 Introduction

The SEA Regulations require that when an environmental report on a proposed plan or programme is prepared, it must identify, describe and evaluate the likely significant effects of implementing reasonable alternatives to the plan or programme which it assesses, as well as the likely significant effects of the plan or programme itself. The analysis of reasonable alternatives is to take into account “the objectives and the geographical scope of the plan”.

## 8.2 Consideration of Alternatives

Drought Plans include a range of management measures that will only be implemented in the event of certain conditions arising during a particular drought event. It is to be noted that each drought event is unique in relation to its severity, the time of year during which it takes place, where precisely the area affected by the drought is located (its spatial scope), as well as the length of time over which the drought lasts (temporal scope). All these factors may require a different response in terms of the measures to be implemented, as well as the sequence and order in which they are implemented.

In the context of drought planning, maintaining a supply of potable water is vital in order to ensure continued public health and safety. It is also important that this is done in a manner in which the environment is protected as much as possible during a period in which many environmental elements will already be under stress due to the prevailing climatic conditions.

As noted earlier, Portsmouth Waters draft Drought Plan and their WRMP are aligned. Whilst the drought plan and the WRMP serve different purposes, one is operational (short-term response) while the other is strategic (long-term supply planning), they are designed to align closely in how options are developed, tested, and selected. The WRMP requires water companies to identify and appraise a range of supply-side and demand-side options to address any forecast supply-demand deficit, demonstrating how the preferred plan was derived. This included testing uncertainties and using adaptive planning to justify selected options, having considered reasonable alternatives. Similarly, drought plans must set out all potential drought actions, including demand restrictions and supply-side actions, and demonstrate how their environmental risks will be assessed and mitigated. Because both plans require structured option identification and appraisal, water companies are expected to develop options in a consistent and aligned way. In relation to this drought plan, each individual drought option is considered to be reasonable alternatives and each option (or ‘Alternative’) has been assessed against the SEA Framework set out in Chapter 7.

It should be recognised that that for the purposes of this plan it has not been possible to examine drought trigger alternatives for each option owing to the need to align nationally and with neighbouring water companies as per the Environment Agency drought severity classifications. These EA classifications help to ensure that drought actions are proportionate to the drought risk. There are five levels of increasing drought severity of which these drought triggers align: Level 0- Normal, Level 1- Developing, Level 2- Drought, Level 3- Severe Drought and Level 4- Emergency Plan.

Portsmouth Water’s Drought Plan consists of a range of drought management Options, with a total of 12 Option types. There are five Demand Side Option types, with a further seven Supply Side Option types. Further information on these Option types is provided in Chapter 9, along with details of the results of the assessments undertaken. The assessment therefore provides information on the relative environmental performance of each of the alternatives and is intended to make the decision-making process for the selection of preferred options more transparent.



# 9. Assessment of Drought Plan Options

## 9.1 Introduction

Stage B2 of the SEA process normally involves the generation and assessment of plan options. This exercise is undertaken in part to fulfil the requirements of the SEA Regulations, which requires that the Environmental Report should consider:

*“reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme” (SEA Regulations Part 3 Section 12 (2)b).*

## 9.2 Development of Options

It is normal practice when developing a Plan to propose different ways (options) of fulfilling its objectives. In respect of the Drought Plan, a series of options were set out which can be implemented in a phased approach to address a developing drought situation i.e. the Drought Plan sets out options which Portsmouth Water can consider taking in response to drought events of different severities.

Portsmouth Water have agreed with their customers the frequency at which demand restrictions might need to be implemented. The agreed Levels of Service (LoS) as defined in their 2022 and 2027 Drought Plan are set out below:

- Temporary Use Bans (1 in 20 years or 5% annual chance),
- Non Essential Use Bans (1 in 80 years or 1.25% annual chance),
- Drought Permits/Orders (1 in 125 years or 0.8% annual chance, changing to 1-in-500 years or a 0.2% annual chance from 2041-42), and
- Level 4 Emergency Drought Orders such as standpipes and rota cuts (1-in-200 years or 0.5% annual chance, changing to 1-in-500 years or a 0.2% annual chance from 2039-40).

In this revision of the Drought Plan, a range of options to deal with a drought situation have been identified as being available and are outlined as follows:

### **Demand side options:**

- Temporary Use Bans (TUBs)
- Non-Essential Use Bans (NEUBs)
- Enhanced Leakage Reduction
- Pressure Management
- Enhanced Communications Campaigns

### **Supply side options:**

- Changing Pump at Source T
- Changing Pump at Source Q
- Changing Pump at Source D
- Source S Drought Permit
- Changing Pump at Source F



- Changing Pump at Source H
- Changing Pump at Source R

Each drought option has been assigned a drought trigger level (based on the Environment Agency’s Water Company Drought Plan Guideline 2025) which are used to describe the level of drought severity and when the options are required to be implemented. Levels range from 0 to 4:

- Level 0 – Normal / baseline conditions (no drought)
- Level 1 – Early drought / increased risk
- Level 2 – Drought
- Level 3 – Severe drought
- Level 4 – Extreme / Emergency drought

A summary of the trigger levels for each option is provided in Table 9-1.

**Table 9-1 - Drought Level Triggers for the Drought Plan Options**

Option Name	Drought Level Trigger
<b>Demand Management Options</b>	
Temporary Use Bans (TUBs)	2
Non-Essential Use Bans (NEUBs)	3a
Enhanced Leakage Reduction	1
Pressure Management	1
Enhanced Communications Campaigns	1
<b>Supply Options</b>	
Changing Pump at Source T	3b
Changing Pump at Source Q	3b
Changing Pump at Source D	3b
Source S Drought Permit	3b
Changing Pump at Source F	3b
Changing Pump at Source H	3b
Changing Pump at Source R	3b

Each Option has been assessed against the SEA Framework in respect of construction and operation phases and considering positive and negative effects separately. Full details of the assessment for each Option is provided within Appendix E. Where available, the assessment tables have been supplemented with Option IDs, descriptions and mitigation that is considered embedded as part of the option. This includes mitigation as identified within Drought Permit Environmental Appraisal Reports (EAR) where required.

It is important to note that it has been necessary to assess the options in the dDP27 using both locational (spatially specific) and non-locational (company-wide) assessment approaches. This reflects the fact that drought management actions vary widely in how, where, and to what extent they interact with the environment. Many drought management measures, such as the changes to abstraction at individual groundwater or river sources, operate at specific sites; these options therefore have defined geographic footprints, clear ecological receptors and localised hydrological consequences. As such these options can be assessed spatially, mapping their interaction with receptors to understand the significance of effect. Some drought options presented in the dDP27 are however



more strategic and operate at a company level, some without a footprint. This includes demand side measures (TUBs, NEUBs, communications, leakage management etc). These options do not produce direct environmental effects at a single place and therefore it was considered more appropriate to assess non-locationally, considering broad themes. It should also be noted that where GIS information has not been made available, for example the location of the licences which may be subject to a change in use, a more generic non-locational assessment has been undertaken. The assessment type (locational or non-locational) used for each option has been provided in Table 9-4/5 and 9-6/7 accordingly.

To allow for the identification of different levels of effects when assessing the Drought Plan proposals, a scoring system has been used to differentiate in terms of magnitude and significance of effects. This scoring system is widely used in SEA and is based around the following scale to reflect the assessment aid questions in the SEA Framework.

**Table 9-2 - Assessment Scale**

Assessment Scale	Assessment Category	Significance of Effect
+++	Major beneficial	Significant
++	Moderate beneficial	
+	Slight beneficial	
0	Negligible or no obvious effect	Not Significant
-	Slight adverse	Significant
--	Moderate adverse	
---	Major adverse	

It is to be noted that the scores will be determined by considering all relevant assessment aid questions (detailed in the SEA Framework) collectively and a judgement made as to an overall assessment score for that aspect of the Drought Plan being considered. The commentary provided explains the rationale behind the score. Any recommendations are noted, as are references to appropriate additional mitigation that is proposed to maximise beneficial effects and/or minimise/avoid any potential adverse effects identified.

This scoring system seeks to capture both the nature and the scale of predicted effects arising from the measures set out in the Drought Plan. Alongside the overall summary rating (colour and symbol), the assessment tables attempt to identify the nature of the effects of the Drought Plan on the SEA objectives according to the level of detail required by the SEA Directive. This includes commentary on the effects, magnitude, scale, duration, permanence and certainty as shown in Table 9-3.

**Table 9-3 - Characteristics of Effect**

Magnitude	Scale (implications of effect)	Duration (length of time over which effect will be present)	Permanence (lasting of effect)	Certainty (that effect will occur)
Large (L)	Local (L)	Long term (LT)	Temporary (T)	High (H)
Medium (M)	Regional (R)	Medium term (MT)	Permanent (P)	Medium (M)
Small (S)	National (N)	Short term (ST)		Low (L)
	Global (G)			



## 9.3 Overview of assessment results - Demand-side options

The following tables provides an overview of assessment results for five types of Demand Side Options considered (Table 9-4 and Table 9-5). **Note that in these tables, the assessment of significance is presented in terms of residual effects (i.e., after any additional mitigation is applied) in respect of construction and operation.** A discussion on these assessment results follows, with full details of the assessment (presenting pre and post mitigation scores) for each Option provided within Appendix E.

Table 9-4 Demand Side Options Construction Score Summary Table – Residual post-mitigation scores

Option Name	Assessment Type (locational / Non locational)	Biodiversity		Soil		Water		Air		Greenhouse Gas Emissions		Climate Factors		Landscape		Cultural Heritage		Population and Human Health		Material Assets			
		To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain		To protect and enhance the functionality, quantity and quality of soils		To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies		To reduce and minimise air and noise emissions		To achieve Portsmouth Water's target of reducing carbon emissions to Net Zero by 2030 and contribute to national target of Net Zero by 2050		To reduce vulnerability of built infrastructure to climate change risks and hazards		To conserve, protect and enhance landscape, townscape and seascape character and visual amenity		To conserve, protect and enhance heritage assets and the historic environment, including archaeological remains		To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing		To minimise resource use and waste production		To avoid negative effects on built assets / infrastructure	
		+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
Temporary Use Bans (TUBs)	Non-locational	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Non-Essential Use Bans (NEUBs)	Non-locational	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Enhanced Leakage Reduction	Non-locational	0	-	0	-	0	-	0	-	0	-	0	0	0	-	0	-	0	-	0	-	0	-
Pressure Management	Non-locational	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Enhanced Communications Campaign	Non-locational	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A



Table 9-5 Demand Side Options Operation Score Summary Table – Residual post-mitigation scores

Option Name	Assessment Type (locational / Non locational)	Biodiversity		Soil		Water		Air		Greenhouse Gas Emissions		Climate Factors		Landscape		Cultural Heritage		Population and Human Health		Material Assets				
		To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain		To protect and enhance the functionality, quantity and quality of soils		To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies		To reduce and minimise air and noise emissions		To achieve Portsmouth Water's target of reducing carbon emissions to Net Zero by 2030 and contribute to national target of Net Zero by 2050		To reduce vulnerability of built infrastructure to climate change risks and hazards		To conserve, protect and enhance landscape, townscape and seascape character and visual amenity		To conserve, protect and enhance heritage assets and the historic environment, including archaeological remains		To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing		To minimise resource use and waste production		To avoid negative effects on built assets / infrastructure		
		+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
Temporary Use Bans (TUBs)	Non-locational	+	-	+	-	++	0	+	0	+	0	+	0	0	-	0	0	0	0	-	+	0	0	-
Non-Essential Use Bans (NEUBs)	Non-locational	+	-	+	-	++	0	+	0	+	0	+	0	0	-	0	0	0	0	-	+	0	0	-
Enhanced Leakage Reduction	Non-locational	+	0	+	0	+++	0	+	0	+	0	+	0	+	0	0	0	0	+	0	++	0	+	0
Pressure Management	Non-locational	+	0	+	0	++	0	+	0	+	0	+	0	+	0	0	0	0	+	0	++	0	+	0
Enhanced Communications Campaign	Non-locational	+	0	+	0	+	0	+	0	+	0	+	0	+	0	0	0	0	+	0	+	0	+	0



## 9.3.1 Temporary Use Bans (TUBs)

Portsmouth Water can impose restrictions on customer's water use through Temporary Use Bans (TUBs), otherwise known as hosepipe bans, as set out in Section 36 of the Flood and Water Management Act 2010 and the Water Use (Temporary Bans) Order 2010. The legislation sets out that water companies may "prohibit one or more specified uses of water supplied by it if it thinks that it is experiencing, or may experience, a serious shortage of water for distribution". TUBs may need to be implemented if voluntary water restraints have not reduced demand sufficiently on their own.

Under the ban, the following uses will be restricted:

- Watering a garden using a hosepipe;
- Cleaning a private motor vehicle using a hosepipe;
- Watering plants on domestic or other non-commercial premises using a hosepipe;
- Cleaning a private leisure boat using a hosepipe;
- Filling or maintaining a domestic swimming or paddling pool;
- Drawing water, using a hosepipe, for domestic recreational use;
- Filling or maintaining a domestic pond using a hosepipe;
- Filling or maintaining an ornamental fountain;
- Cleaning walls or windows of domestic premises using a hosepipe;
- Cleaning paths or patios using a hosepipe;
- Cleaning other artificial outdoor surfaces using a hosepipe.

### Construction

No construction activities are required in relation to this Option and as such no effects have been identified.

### Operation

The following significant impacts are anticipated during the operational phase:

SEA Objective	Assessment category	Description of impact
Objective 3 - To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	Moderate beneficial	This option is temporary and implemented only during drought conditions. By reducing non-essential water use, TUBs directly lower demand on public supply, resulting in decreased abstraction from groundwater and surface water sources. This will help maintain river flows and protect the integrity of waterbodies during periods of stress. Additionally, by prioritising water availability for essential services, the option enhances system resilience.

In relation to residual effects from operation of this Option, a number of slight beneficial effects have been identified and these are mainly associated with the outcome of reducing demand and potentially reducing abstraction / treatment. This is considered likely to have slight beneficial effects in terms of protecting biodiversity (Obj. 1) and soil (Obj. 2), reducing air and greenhouse gas emissions (Obj. 4 and 5), reducing vulnerability to climate change (Obj. 6) and minimising resource use and waste production (Obj. 10).

Minor adverse effects have also been identified during operation of the Option. These relate to restrictions on water use which could have effects on biodiversity (Obj. 1) such as that found in domestic gardens. There could also be



increased dust related erosion of soils, though this would be marginal (Obj. 2) and temporary effects on visual amenity as watering of private gardens and use of ornamental fountains etc will be restricted (Obj. 7). A temporary use ban is likely to have minor negative effects on the health and wellbeing of the local community (Obj. 9) as there will be restrictions on irrigation of gardens and allotment gardens and use of water for recreational purposes. There may also be a small increased risk of fires in allotments as vegetation dries out. Built assets may also be negatively affected as the option may involve restrictions on washing or cleaning (Obj. 11).

No significant effects are anticipated for this Option. All effects are considered small in scale, temporary and confined to the local area. No additional mitigation has been identified.

### 9.3.2 Non-Essential Use Bans (NEUBs)

Should the drought continue to get worse, or the water demand reductions from TUBs are less than expected, then Portsmouth Water can extend the ban to “non-essential” uses of water. NEUBs are a set of measures granted to water companies by the Secretary of State via a Drought Order.

The Drought Direction 2016 allows water companies to restrict the use of water for the following purposes:

- Watering outdoor plants on commercial premises using a hosepipe;
- Filling or maintaining a non-domestic swimming or paddling pool;
- Filling or maintaining a pond;
- Operating a mechanical vehicle washer;
- Cleaning any vehicle, boat, aircraft or railway rolling stock using a hosepipe;
- Cleaning non-domestic premises using a hosepipe;
- Cleaning a window of a non-domestic building using a hosepipe;
- Cleaning industrial plant using a hosepipe;
- Suppressing dust using a hosepipe;
- Operating cisterns in an unoccupied building.

#### Construction

No construction activities are required in relation to this Option and as such no effects have been identified.

#### Operation

The following significant impacts are anticipated during the operational phase:

SEA Objective	Assessment category	Description of impact
Objective 3 - To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	Moderate beneficial	This option is temporary and implemented only during drought conditions. By reducing non-essential water use, NEUBs directly lower demand on public supply, resulting in decreased abstraction from groundwater and surface water sources. This will help maintain river flows and protect the integrity of waterbodies during periods of stress. Additionally, by prioritising water availability for essential services, the option enhances system resilience.



In relation to operational effects, a number of slight beneficial effects have been identified, and these are mainly associated with the outcome of reducing demand and potentially reducing abstraction / treatment. This is considered likely to have beneficial effects in terms of protecting biodiversity (Obj. 1) and soil (Obj. 2), reducing air and greenhouse gas emissions (Obj. 4 and 5), reducing vulnerability to climate change (Obj. 6) and minimising resource use and waste production (Obj. 10).

Minor adverse effects have also been identified during operation of the Option. These relate to restrictions on water use which could have negative effects on biodiversity (Obj. 1) such as that found in domestic gardens and there may be an increased risk of INNS transfer where cleaning of boats and industrial plant is not permitted. A NEUB may marginally impact soil quality (Obj. 2) due to increased dust related erosion, however as this is a temporary solution, effects are not anticipated to be significant. The Option may also have minor, temporary, local effects on visual amenity as watering of private gardens, washing of domestic and commercial premises and use of ornamental fountains etc will be restricted (Obj. 7). A NEUB is likely to have minor negative effects on the health and wellbeing of the local community (Obj. 9) as there will be restrictions on irrigation of gardens and allotments, and use of water for recreational purposes. There may also be a small increased risk of fires in allotments as vegetation dries out. Mitigation has been suggested including allowing allotments limited supplies of water and ensuring high levels of communication before, during and following the implementation, and considering exemptions where dust suppression would alleviate impacts on particularly vulnerable groups. The Option is likely to adversely impact the maintenance of buildings and industrial plant (Obj. 11), although effects are not anticipated to be significant.

No significant effects are anticipated for this Option. All effects are considered small in scale, temporary and confined to the local area.

### 9.3.3 Enhanced Leakage Reduction

In respect of this Option, construction activities will be required. Measures to enhance leakage reduction include:

- Increasing resources to find and fix leaks (enhancing Active Leakage Control);
- Reducing the time taken to repair a leak once found by customers;
- Increasing communications with customers to further encourage them to report any leaks;
- Increasing the frequency of DMA flow monitoring;
- Reviewing and adapting the ongoing leakage programme to prioritise fixing leaks over other repair activities;
- Reducing pressure across the supply network.

#### Construction

Construction effects for leakage reduction works are anticipated to be either neutral or slight adverse. Slight adverse effects are anticipated in respect of Objectives 1, 2, 3, 4, 5, 7, 8, 9, 10 and 11. These are due to construction activities potentially affecting habitats or species, disturbing contaminated land or agricultural land, resulting in emissions (air and water pollution), causing visual disruption, potentially impacting known or unknown heritage assets, affecting the health of local communities, using new resources and materials as well as effects on built assets or infrastructure such as road or path surfacing. All effects related to construction are anticipated to be small in scale, short term and temporary, and confined to the local area. Mitigation proposed for Objectives 4 and 9 is to ensure plant and equipment is well maintained and ideally low or zero emission – this will act to reduce air and noise emissions. Effective community engagement should also be made in relation to maintaining the health and wellbeing of people in the vicinity of proposed works.

#### Operation

During operation, a range of beneficial effects are anticipated. The following significant impacts are anticipated during the operational phase:



SEA Objective	Assessment category	Description of impact
Objective 3 - To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	Major beneficial	By minimising water loss across the supply network, the option helps to maintain the quantity of surface and groundwater bodies during drought conditions in operation. Reduced leakage also lowers the risk of unintended discharge that could affect water quality or disrupt sensitive habitats.
Objective 10 - To minimise resource use and waste production	Moderate beneficial	Leakage reduction measures will contribute positively by reducing water loss, thereby minimising resource consumption and supporting more efficient use of infrastructure.

In relation to slight beneficial effects, it is anticipated that a reduction in water loss should benefit biodiversity and soil quality (Obj. 1 and 2). Where water demand is reduced there may be positive effects from a reduction in air and noise emissions (Obj. 4) and greenhouse gas emissions (Obj. 5) associated with water supply/treatment. Flood risk will be reduced due to network improvements (Obj. 6) and improved water efficiency and retainment of water within the environment may benefit landscape (Obj. 7). Public health may be improved through securing a more resilient water supply (Obj. 9). Reduced leakage should reduce pressures on wider infrastructure (Obj. 11).

Operational effects are considered to be long term and permanent at a local scale.

### 9.3.4 Pressure Management

Pressure management strongly relates to reducing leakage. A ‘calm’ network, where pressures are consistent as possible throughout the day, increases the life of pipes and reduces the number of leaks and bursts that occur. In a period of drought, pressure management can be used to reduce the demand for water and water lost through leakage. It can also help conserve what water resources are available. Portsmouth Water (and other water companies) can reduce customers water pressure to the guaranteed standard of seven metres static head (0.7 bar) in the communication pipe. Problematic District Metered Areas (DMAs) such as those with high consumption, can also be rezoned within a Water Resource Zone (WRZ).

It is important that throughout the duration of a drought event the activities to reduce pressure within the network are enhanced. This can include reducing the pressure below the guaranteed standard or only reducing the pressure during the day. It is difficult to estimate the demand saving benefit of this option as it will ultimately vary across the WRZ. The location for this option will focus in hot spot areas within the DMAs.

#### Construction

No construction activities are required in relation to this Option and as such no effects have been identified.

#### Operation

During operation, a range of beneficial effects are anticipated. The following significant impacts are anticipated during the operational phase:

SEA Objective	Assessment category	Description of impact
Objective 3 - To protect and enhance the quantity and quality of surface,	Moderate beneficial	By minimising water loss across the supply network, the option helps to maintain the quantity of surface and groundwater bodies during drought conditions in operation. Reducing the



groundwater, estuarine and coastal waterbodies		chances of leakage or burst pipes also lowers the risk of unintended discharge that could affect water quality or disrupt sensitive habitats.
Objective 10 - To minimise resource use and waste production	Moderate beneficial	Pressure management will contribute positively by reducing water loss and conserving water, thereby minimising resource consumption and supporting more efficient use of infrastructure.

In relation to slight beneficial effects, it is anticipated that a reduction in unintended water discharge should benefit biodiversity and soil quality (Obj. 1 and 2). Where water resources are conserved through reduced pressure there may be positive effects from a reduction in air and noise emissions (Obj. 4) and greenhouse gas emissions (Obj. 5) associated with water supply/treatment. By improving the efficiency and resilience of the water supply network through reducing leakage and reducing pressure, the option may help reduce vulnerability of infrastructure during drought conditions (Obj. 6). Improved water efficiency and retainment of water within the environment may benefit landscape (Obj. 7). Public health may be improved through securing a more resilient water supply (Obj. 9) and reduced leakage should reduce pressures on wider infrastructure (Obj. 11).

Operational effects are considered to be long term and permanent at a local scale.

### 9.3.5 Enhanced Communications Campaign

The campaign will include social media posts, local press and radio, posters in public buildings, email postscripts, having discussions with stakeholders, NAVs, and groups like Citizen Advice etc.

#### Construction

No construction activities are required in relation to this Option and as such no effects have been identified.

#### Operation

A range of slight beneficial effects are anticipated for this option. It is anticipated that by raising awareness to reduce pressure on water supplies during drought conditions, this should benefit biodiversity (Obj. 1), soil quality (Obj. 2) and water (Obj. 3). There may be positive effects from a reduction in air quality (Obj. 4) and greenhouse gas emissions (Obj. 5) due to reduced water supply / treatment. Positive effects are anticipated in terms of the vulnerability of built infrastructure (Obj. 6) due to water being kept within the environment. Improved water efficiency and retainment of water within the environment may benefit landscape (Obj. 7). Public health may benefit where these measures reduce the need for more disruptive action (Obj.9) and resource use and waste production will be reduced (Obj. 10).

## 9.4 Overview of assessment results – Supply-side options

The following tables provides an overview of assessment results for the seven Supply Side Options considered (Table 9-6 and Table 9-7). **Note that in these tables, the assessment of significance is presented in terms of residual effects (i.e., after any additional mitigation is applied) in respect of construction and operation.** A discussion on these assessment results follows, with full details of the assessment for each Option provided within Appendix E.



Table 9-6 Supply Side Options Construction Score Summary Table – Residual post-mitigation scores

Option Name	Assessment Type (location or non-locational)	Biodiversity		Soil		Water		Air		Greenhouse Gas Emissions		Climate Factors		Landscape		Cultural Heritage		Population and Human Health		Material Assets			
		To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain		To protect and enhance the functionality, quantity and quality of soils		To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies		To reduce and minimise air and noise emissions		To achieve Portsmouth Water's target of reducing carbon emissions to Net Zero by 2030 and contribute to national target of Net Zero by 2050		To reduce vulnerability of built infrastructure to climate change risks and hazards		To conserve, protect and enhance landscape, townscape and seascape character and visual amenity		To conserve, protect and enhance heritage assets and the historic environment, including archaeological remains		To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing		To minimise resource use and waste production		To avoid negative effects on built assets / infrastructure	
		+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
Changing Pump at Source T	Locational	0	-	0	0	0	-	0	-	0	-	0	0	0	0	0	0	0	0	0	-	0	0
Changing Pump at Source Q	Locational	0	-	0	0	0	-	0	-	0	-	0	0	0	0	0	0	0	0	0	-	0	0
Changing Pump at Source D	Locational	0	-	0	0	0	-	0	-	0	-	0	0	0	0	0	0	0	0	0	-	0	0
Source S Drought Permit	Locational	0	-	0	0	0	-	0	-	0	-	0	0	0	0	0	0	0	0	0	-	0	0
Changing Pump at Source F	Locational	0	-	0	0	0	-	0	-	0	-	0	0	0	0	0	0	0	0	0	-	0	0
Changing Pump at Source H	Locational	0	-	0	0	0	-	0	-	0	-	0	0	0	0	0	0	0	0	0	-	0	0
Changing Pump at Source R	Locational	0	-	0	0	0	-	0	-	0	-	0	0	0	0	0	0	0	0	0	-	0	0



Table 9-7 Supply Side Options Operation Score Summary Table – Residual post-mitigation scores

Option Name	Assessment Type (location or non-locational)	Biodiversity		Soil		Water		Air		Greenhouse Gas Emissions		Climate Factors		Landscape		Cultural Heritage		Population and Human Health		Material Assets			
		To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain		To protect and enhance the functionality, quantity and quality of soils		To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies		To reduce and minimise air and noise emissions		To achieve Portsmouth Water's target of reducing carbon emissions to Net Zero by 2030 and contribute to national target of Net Zero by 2050		To reduce vulnerability of built infrastructure to climate change risks and hazards		To conserve, protect and enhance landscape, townscape and seascape character and visual amenity		To conserve, protect and enhance heritage assets and the historic environment, including archaeological remains		To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing		To minimise resource use and waste production		To avoid negative effects on built assets / infrastructure	
		+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
Changing Pump at Source T	Locational	0	--	0	-	+	--	0	0	0	-	+	0	0	0	0	-	+	0	0	-	+	0
Changing Pump at Source Q	Locational	0	--	0	-	+	--	0	0	0	-	+	0	0	0	0	-	+	0	0	-	+	0
Changing Pump at Source D	Locational	0	--	0	-	+	--	0	0	0	-	+	0	0	0	0	-	+	0	0	-	+	0
Source S Drought Permit	Locational	0	---	0	-	+	---	0	0	0	-	+	0	0	-	0	-	+	--	0	-	+	0
Changing Pump at Source F	Locational	0	--	0	-	+	--	0	0	0	-	+	0	0	0	0	-	+	0	0	-	+	0
Changing Pump at Source H	Locational	0	--	0	-	+	--	0	0	0	-	+	0	0	0	0	-	+	0	0	-	+	0
Changing Pump at Source R	Locational	0	--	0	-	+	--	0	0	0	-	+	0	0	0	0	-	+	0	0	-	+	0



## 9.4.1 Changing Pump at Source T

Source T provides an individual annual licence quantity of 10MI/d from two boreholes and forms part of the Source Q Group Licence (Source Q, Source R, Source S and Source T) which has an annual average licence rate of 28.38 MI/d. The 1 in 200 year Deployable Output as per the WRMP24 is 6.4 MI/d (annual average) and 7.64 MI/d (critical period).

The highest Deepest Advisable Pumping Water Level (DAPWL) at Source T sits at -44.0mAOD and the pumps for both boreholes (BH1 & BH2) sit at -41.7mAOD. The constraint at this source during low groundwater level is the operational pump capacity. The current pump would not be able to cope with the increase in hydraulic head as groundwater levels fall past a certain point.

The drought option for Source T is to remove the constraint by replacing the current pump with one with a higher rating to allow abstraction up to the licenced amount as groundwater levels continue to recede.

### Construction

Construction effects are anticipated to be either neutral or slight adverse. Slight adverse effects are anticipated in respect of Objectives 1, 3, 4, 5, and 10, and are in relation to construction activities potentially affecting habitats or species and water quality, resulting in air, noise and greenhouse gas emissions, and use of new resources and materials. These effects are anticipated to be small in scale, short term and temporary, and confined to the local area.

In respect of Objective 1, mitigation proposed includes best practice methods, including pollution control, to minimise disturbance effects and habitat loss, and implementation of a robust CEMP are recommended. Best practice methods are also recommended for Objectives 4, 7, 8 and 11 to reduce adverse effects on air quality, landscape, cultural heritage and built assets and infrastructure. The reuse of excavated material and use of trenchless techniques during construction (Obj. 10) and implementation of a Traffic Management Plan (Obj. 11) should both be considered.

### Operation

The following significant impacts are anticipated during the operation phase:

SEA Objective	Assessment category	Description of impact
Objective 1 - To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain	Moderate adverse	During operation, there is a risk of water quality issues such as increased turbidity or nitrates, which could impact sensitive species. Groundwater Dependent Terrestrial Ecosystems (GWDTEs) may also be impacted by reduced groundwater flows during operation of the option.
Objective 3 - To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	Moderate adverse	During operation, there is a risk that turbidity, nitrates or other water quality issues could materialise when pumping under low groundwater levels. Changes to abstraction can mobilise older, mineral rich water and there is potential for a deterioration in drinking water quality and increased treatment requirements during operation of the option. In terms of water quantity, pumping more groundwater may reduce baseflows to rivers



		and streams and cause lower river flows. The option may also increase abstraction from deeper aquifer zones, reducing groundwater levels and potentially leading to longer recovery times after drought.
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Slight adverse effects have been identified in relation to soil (Obj. 2) as greater abstraction of groundwater may remove moisture from the soil, causing it to dry and increase the risk of erosion. Slight adverse effects have also been identified for heritage (Obj. 8) due to the potential impacts on waterlogged historic remains, as well as Objectives 5 and 10 as energy demand may increase if a higher-rated pump is installed, contributing to resource demand and greenhouse gas emissions.

In relation to slight beneficial effects, it is anticipated that the Option will support water quantity by improving abstraction efficiency and reducing stress on surrounding waterbodies (Obj. 3), maintain water supply and reduce pressure on existing systems supporting infrastructure resilience (Obj. 6), improve public health and wellbeing by helping to maintain water supply during drought conditions (Obj. 9) and ensure this source remains a valued asset (Obj. 11).

All operational effects are considered small in scale, temporary and confined to the local area. Mitigation is suggested in relation to Objectives 1 and 3 where further **assessment** and monitoring will be required to understand potential impacts, Objective **5 where the** use of renewables for energy supply during operation should be investigated **and Objective 8 where impacts** through lowering of the water table on any heritage assets (including non-designated heritage assets) that are waterlogged may be investigated via engagement with heritage specialist.

## 9.4.2 Changing Pump at Source Q

Source Q provides an individual annual licence quantity of 22.0MI/d from a well with a borehole drilled through the bottom of it and forms part of the Source Q Group Licence (Source Q, Source R, Source S and Source T) which has an annual average licence rate of 28.38 MI/d. The 1 in 200 year Deployable Output for Source Q as per the WRMP24 is 9.2 MI/d (annual average) and 11.08 MI/d (critical period).

The well has the highest Deepest Advisable Pumping Water Level (DAPWL) of -7.5mAOD due to water quality issues beyond this, while the borehole DAPWL is set at -36.0mAOD. There are three pumps at this source, sitting at -2.2mAOD (1), -14.1mAOD (2) and -11.3mAOD (3). The constraint at this source during low groundwater level is the operational pump capacity. The current pumps would not be able to cope with the increase in hydraulic head as groundwater levels fall past a certain point.

The drought option for Source Q is to remove the constraint by replacing the current pumps with ones with a higher rating to allow abstraction up to the licenced amount as groundwater levels continue to recede.

### Construction

Construction effects are anticipated to be either neutral or slight adverse. Slight adverse effects are anticipated in respect of Objectives 1, 3, 4, 5, and 10, and are in relation to construction activities potentially affecting habitats or species and water quality, resulting in air, noise and greenhouse gas emissions, and use of new resources and materials. These effects are anticipated to be small in scale, short term and temporary, and confined to the local area.

In respect of Objective 1, best practice methods, including pollution control, to minimise disturbance effects and habitat loss, and implementation of a robust CEMP are recommended. Best practice methods are also recommended for Objectives 4, 7, 8 and 11 to reduce adverse effects on air quality, landscape, cultural heritage



and built assets and infrastructure. The reuse of excavated material and use of trenchless techniques during construction (Obj. 10) and implementation of a Traffic Management Plan (Obj. 11) should both be considered.

### Operation

The following significant impacts are anticipated during the operation phase:

<b>SEA Objective</b>	<b>Assessment category</b>	<b>Description of impact</b>
Objective 1 - To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain	Moderate adverse	During operation, there is a risk of water quality issues such as increased turbidity or nitrates, which could impact sensitive species. Groundwater Dependent Terrestrial Ecosystems (GWDTEs) may also be impacted by reduced groundwater flows during operation of the option.
Objective 3 - To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	Moderate adverse	During operation, there is a risk that turbidity, nitrate or other water quality issues could materialise when pumping under low groundwater levels. Changes to abstraction can mobilise older, mineral rich water and there is potential for a deterioration in drinking water quality and increased treatment requirements during operation of the option. In terms of water quantity, pumping more groundwater may reduce baseflows to rivers and streams and cause lower river flows. The option may also increase abstraction from deeper aquifer zones, reducing groundwater levels and potentially leading to longer recovery times after drought.

Slight adverse effects have been identified in relation to Soil (Obj. 2) as greater abstraction of groundwater may remove moisture from the soil, causing it to dry and increase the risk of erosion. Slight adverse effects have also been identified for heritage (Obj. 8) due to the potential impacts on waterlogged historic remains, as well as Objectives 5 and 10 as energy demand may increase if a higher-rated pump is installed, contributing to resource demand and greenhouse gas emissions.

In relation to slight beneficial effects, it is anticipated that the Option will support water quantity by improving abstraction efficiency and reducing stress on surrounding waterbodies (Obj. 3), maintain water supply and reduce pressure on existing systems supporting infrastructure resilience (Obj. 6), improve public health and wellbeing by helping to maintain water supply during drought conditions (Obj. 9) and ensure this source remains a valued asset (Obj. 11).

All operational effects are considered small in scale, temporary and confined to the local area. Mitigation is suggested in relation to Objectives 1 and 3 where further assessment and monitoring will be required to understand potential impacts, Objective 5 where the use of renewables for energy supply during operation should be investigated and Objective 8 where impacts through lowering of the water table on any heritage assets (including non-designated heritage assets) that are waterlogged may be investigated via engagement with heritage specialist.



### 9.4.3 Changing Pump at Source D

Source D provides an individual annual licence quantity of 1.8MI/d and forms part of a group licence with Source C which has an annual average licence rate of 20.5 MI/d. The 1 in 200 year Deployable Output for Source D as per the WRMP24 is 0.9 MI/d (annual average) and 1.8 MI/d (critical period).

The Deepest Advisable Pumping Water Level (DAPWL) for the borehole has been set to - 43.0mAOD and the pump currently sits at -21.1mAOD. While there is approximately 22.0m between the pump and DAPWL, it is suggested that the groundwater levels do not drop as low as the DAPWL. However, the source constraint is the pump cut-out level / pump depth as groundwater levels recede.

The drought option for Source D is to remove the constraint by lowering the pump depth and associated pump cut out level. The pump could potentially be lowered by approximately 22m before reaching the DAPWL which could allow abstraction up to the licenced amount as groundwater levels continue to recede. This may also be beneficial for any potential Emergency Plan (Level 4) options for this source.

#### Construction

Construction effects are anticipated to be either neutral or slight adverse. Slight adverse effects are anticipated in respect of Objectives 1, 3, 4, 5, and 10, and are in relation to construction activities potentially affecting habitats or species and water quality, resulting in air, noise and greenhouse gas emissions, and use of new resources and materials. These effects are anticipated to be small in scale, short term and temporary, and confined to the local area.

In respect of Objective 1, mitigation proposed includes best practice methods, including pollution control, to minimise disturbance effects and habitat loss, and implementation of a robust CEMP are recommended. Best practice methods are also recommended for Objectives 4, 7, 8 and 11 to reduce adverse effects on air quality, landscape, cultural heritage and built assets and infrastructure. The reuse of excavated material and use of trenchless techniques during construction (Obj. 10) and implementation of a Traffic Management Plan (Obj. 11) should both be considered.

#### Operation

The following significant impacts are anticipated during the operation phase:

SEA Objective	Assessment category	Description of impact
Objective 1 - To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain	Moderate adverse	During operation, there is a risk of water quality issues such as increased turbidity or nitrates, which could impact sensitive species. Groundwater Dependent Terrestrial Ecosystems (GWDTEs) may also be impacted by reduced groundwater flows during operation of the option.
Objective 3 - To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	Moderate adverse	During operation, there is a risk that turbidity, nitrate or other water quality issues could materialise when pumping under low groundwater levels. Changes to abstraction can mobilise older, mineral rich water and there is potential for a deterioration in drinking water quality and increased treatment requirements during operation of the option. In terms of water quantity, pumping more groundwater may reduce baseflows to rivers



		and streams and cause lower river flows. The option may also increase abstraction from deeper aquifer zones, reducing groundwater levels and potentially leading to longer recovery times after drought.
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Slight adverse effects have been identified in relation to soil (Obj. 2) as greater abstraction of groundwater will remove moisture from the soil, causing it to dry and increase the risk of erosion. Slight adverse effects have also been identified for heritage (Obj. 8) due to the potential impacts on waterlogged historic remains, as well as Objectives 5 and 10 as energy demand may increase if a higher-rated pump is installed, contributing to resource demand and greenhouse gas emissions.

In relation to slight beneficial effects, it is anticipated that the Option will support water quantity by improving abstraction efficiency and reducing stress on surrounding waterbodies (Obj. 3), maintain water supply and reduce pressure on existing systems supporting infrastructure resilience (Obj. 6), improve public health and wellbeing by helping to maintain water supply during drought conditions (Obj. 9) and ensure this source remains a valued asset (Obj. 11).

All operational effects are considered small in scale, temporary and confined to the local area. Mitigation is suggested in relation to Objectives 1 and 3 where further assessment and monitoring will be required to understand potential impacts, Objective 5 where the use of renewables for energy supply during operation should be investigated and Objective 8 where impacts through lowering of the water table on any heritage assets (including non-designated heritage assets) that are waterlogged may be investigated via engagement with heritage specialist.

## 9.4.4 Source S Drought Permit

Source S provides an individual annual licence quantity of 2.5MI/d and forms part of the Source Q Group Licence (Source Q, Source R, Source S and Source T) which has an annual average licence rate of 28.38MI/d.

The highest Deepest Advisable Pumping Water Level (DAPWL) for the borehole has been set to ~31mAOD and the pump sits at ~28mAOD.

The drought option for Source S is to remove the constraint by replacing the current pumps with one with a higher rating to allow abstraction up to the revised licence amount as groundwater levels continue to recede.

Construction works involve lifting, replacing and reconnecting a larger pump, and potentially the installation of a temporary treatment package plant.

### Construction

Construction effects are anticipated to be either neutral or slight adverse. Slight adverse effects are anticipated in respect of Objectives 1, 3, 4, 5, and 10, and are in relation to construction activities potentially affecting habitats or species and water quality, resulting in air, noise and greenhouse gas emissions, and use of new resources and materials. These effects are anticipated to be small in scale, short term and temporary, and confined to the local area.

In respect of Objective 1, mitigation proposed includes, best practice methods, including pollution control, to minimise disturbance effects and habitat loss, and implementation of a robust CEMP are recommended. Best practice methods are also recommended for Objectives. 4, 7, 8 and 11 to reduce adverse effects on air quality, landscape, cultural heritage and built assets and infrastructure. The reuse of excavated material and use of trenchless techniques during construction (Obj. 10) and implementation of a Traffic Management Plan (Obj. 11) should both be considered.



Operation

The following significant impacts are anticipated during the operation phase:

SEA Objective	Assessment category	Description of impact
<p>Objective 1 - To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain</p>	<p>Major adverse</p>	<p>During operation, there is a risk of water quality issues such as increased turbidity or nitrates, which could impact sensitive species. Groundwater Dependent Terrestrial Ecosystems (GWDTEs) may also be impacted by reduced groundwater flows during operation of the option.</p> <p>As identified in the Source S EAR there are potential for significant impacts on Arundel Park SSSI unit 2 and Arun Valley Watersfield to Arundel LWS due to a decrease in habitat quality as a result of decreased water levels, a decrease in the extent of habitat as a result of changes in water levels and increased predation and changes in abundance of species due to loss of habitat. Up to major impacts are also identified for NERC habitats (Reedbeds, lowland fens) due to a decrease in habitat quality as a result of decreased water levels and a decrease in the extent of habitat as a result of changes in water levels, and for headwaters due to a decrease in habitat quality as a result of decreased water levels and flows. Major impacts are likely for macroinvertebrates at Park Bottom Tributary, up to major for those at Mill Stream and WWT Reserve and uncertain for those at Swanbourne Lake due to reduced flows causing temporal loss of available habitats, leading to localised reduction or loss of communities or species, fine sediment deposition, smothering of habitats with an impact on macroinvertebrate population diversity and abundance and water quality impacts directly affecting macroinvertebrate diversity and abundances.</p> <p>Moderate impacts are likely for macrophytes at Park Bottom Tributary and minor to moderate impacts for macrophytes at Swanbourne Lake. These impacts are due to reasons including reduced flow velocities leading to loss/reduction of rheophilic species, reduced flows causing temporal loss of available habitats, leading to localised reduction or loss of communities or species, fine sediment deposition, smothering macrophytes, leading to loss of population diversity and abundance, water quality impacts (notably nutrient increase) affecting macrophyte diversity and abundances e.g. substitution with eutrophic species or filamentous algae.</p> <p>For protected NERC and notable species minor to moderate impacts for birds (Park Bottom tributary) and moderate impacts for water vole (Park Bottom tributary, WWT Reserve and Mill Stream). These are due to indirect impacts to food sources (fish, aquatic phases of aquatic species and flying insects that are dependent on water habitats) upon which birds, bats and otter feed and increased predation of water vole due to exposed burrows and reduced water levels.</p>



		In relation to INNS, moderate impacts are likely for New Zealand pygmyweed (macrophyte INNS) and Nuttall's waterweed (macrophyte INNS) as they may outcompete other species that are more sensitive to water level changes and expand its range within the site.
Objective 3 - To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	Major adverse	<p>During operation, there is a risk that turbidity, nitrate or other water quality issues could materialise when pumping under low groundwater levels. Changes to abstraction can mobilise older, mineral rich water and there is potential for a deterioration in drinking water quality and increased treatment requirements during operation of the option. In terms of water quantity, pumping more groundwater may reduce baseflows to rivers and streams and cause lower river flows. The option may also increase abstraction from deeper aquifer zones, reducing groundwater levels and potentially leading to longer recovery times after drought.</p> <p>The WFD assessed there is a medium risk of temporary deterioration in quantitative status owing to the GWDTes test. All of the impacts are considered to be short-term, temporary and reversible.</p> <p>The EAR identified major impacts are likely at Park Bottom tributary due to large flow reductions (relative). Up to major impacts are likely for Mill Stream and Wildfowl and Wetlands Trust (WWT) reserve due to the impacts on flows and levels. Medium risk impacts are likely for Park Bottom tributary, Mill Stream and WWT reserve in relation to hydromorphology.</p>
Objective 9 - To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	Moderate adverse	The EAR identified moderate impacts are likely on Park Bottom tributary Chalk Springs Fishery (brown and rainbow trout fishing) due to potential for longer term impact on fish population and therefore fishing and loss of a recreational resource.

Slight adverse effects have been identified in relation to soil (Obj. 2) as greater abstraction of groundwater may remove moisture from the soil, causing it to dry and increase the risk of erosion. Slight adverse effects have also been identified for heritage (Obj. 8) due to the potential impacts on waterlogged historic remains, as well as Objectives 6 and 10 as energy demand may increase if a higher-rated pump is installed, contributing to resource demand and greenhouse gas emissions. The EAR identifies likely minor impacts on South Downs National Park and National Character Area for reasons including impacts on wildlife and habitats through temporary exacerbation of drought conditions and impact on landscape through temporary exacerbation of drought conditions and therefore slight adverse effects are anticipated for landscape (Obj. 7).

In relation to slight beneficial effects, it is anticipated that the Option will support water quantity will contribute to resilience of supply by improving the reliability of assets within the network (Obj. 3), maintain water supply and reduce pressure on existing systems supporting infrastructure resilience (Obj. 6), improve public health and wellbeing by helping to maintain water supply during drought conditions (Obj. 9) and ensure this source remains a valued asset (Obj. 11).

All operational effects are considered small in scale, temporary and confined to the local area. Mitigation is suggested in relation to Objectives 1 and 3 where further assessment and monitoring will be required to understand potential impacts and additional mitigation is outlined in the Source S EAR, Objective 5 where the use of



renewables for energy supply during operation should be investigated and Objective 8 where impacts through lowering of the water table on any heritage assets (including non-designated heritage assets) that are waterlogged may be investigated via engagement with heritage specialist.

## 9.4.5 Changing Pump at Source F

Source F provides an annual licence quantity of 9.02MI/d from a well and forms parts of a group licence with Source G. Two Deepest Advisable Pumping Water Level (DAPWLs) have been identified at 5.5mAOD and 16mAOD. There are two pumps in the well and these both sit at 9.2mAOD. The 1 in 200 year Deployable Output as per the WRMP24 is 7.2 MI/d (annual average) and 11.56 MI/d (critical period).

The constraint at this source during low groundwater level is the operational pump capacity. The current pump would not be able to cope with the increase in hydraulic head as groundwater levels fall past a certain point.

The drought option for Source F is to remove the constraint by replacing the current pump with one with a higher rating to allow abstraction up to the licenced amount as groundwater levels continue to recede.

### Construction

Construction effects are anticipated to be either neutral or slight adverse. Slight adverse effects are anticipated in respect of Objectives 1, 3, 4, 5, and 10, and are in relation to construction activities potentially affecting habitats or species and water quality, resulting in air, noise and greenhouse gas emissions, and use of new resources and materials. These effects are anticipated to be small in scale, short term and temporary, and confined to the local area.

In respect of Objective 1, mitigation proposed includes, best practice methods, including pollution control, to minimise disturbance effects and habitat loss, and implementation of a robust CEMP are recommended. Best practice methods are also recommended for Objectives. 4, 7, 8 and 11 to reduce adverse effects on air quality, landscape, cultural heritage and built assets and infrastructure. The reuse of excavated material and use of trenchless techniques during construction (Obj. 10) and implementation of a Traffic Management Plan (Obj. 11) should both be considered.

### Operation

The following significant impacts are anticipated during the operation phase:

SEA Objective	Assessment category	Description of impact
Objective 1 - To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain	Moderate adverse	During operation, there is a risk of water quality issues such as increased turbidity or nitrates, which could impact sensitive species. Groundwater Dependent Terrestrial Ecosystems (GWDTEs) may also be impacted by reduced groundwater flows during operation of the option.
Objective 3 - To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	Moderate adverse	During operation, there is a risk that turbidity, nitrate or other water quality issues could materialise when pumping under low groundwater levels. Changes to abstraction can mobilise older, mineral rich water and there is potential for a deterioration in drinking water quality and increased treatment requirements



		<p>during operation of the option. In terms of water quantity, pumping more groundwater may reduce baseflows to rivers and streams and cause lower river flows. The option may also increase abstraction from deeper aquifer zones, reducing groundwater levels and potentially leading to longer recovery times after drought.</p>
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Slight adverse effects have been identified in relation to soil (Obj. 2) as greater abstraction of groundwater may remove moisture from the soil, causing it to dry and increase the risk of erosion. Slight adverse effects have also been identified for heritage (Obj. 8) due to the potential impacts on waterlogged historic remains, as well as Objectives 5 and 10 as energy demand may increase if a higher-rated pump is installed, contributing to resource demand and greenhouse gas emissions.

In relation to slight beneficial effects, it is anticipated that the Option will support water quantity by improving abstraction efficiency and reducing stress on surrounding waterbodies (Obj. 3), maintain water supply and reduce pressure on existing systems supporting infrastructure resilience (Obj. 6), improve public health and wellbeing by helping to maintain water supply during drought conditions (Obj. 9) and ensure this source remains a valued asset (Obj. 11).

All operational effects are considered small in scale, temporary and confined to the local area. Mitigation is suggested in relation to Objectives 1 and 3 where further assessment and monitoring will be required to understand potential impacts, Objective 5 where the use of renewables for energy supply during operation should be investigated and Objective 8 where impacts through lowering of the water table on any heritage assets (including non-designated heritage assets) that are waterlogged may be investigated via engagement with heritage specialist.

## 9.4.6 Changing Pump at Source H

Source H provides an individual licence quantity of 9.12MI/d from two boreholes (BH2 and BH3). The Deepest Advisable Pumping Water Level (DAPWL) for BH2 sits at -3mAOD while BH3 sits at -5mAOD. The pump for BH2 sits at 11.4mAOD. This is approximately 14m above the DAPWL. The pump for BH3 sits at 10.7mAOD. This is approximately 15m above the DAPWL. The constraint at this source during low groundwater level is the operational pump capacity. The current pump would not be able to cope with the increase in hydraulic head as groundwater levels falls past a certain point.

The drought option for Source H is to remove the constraint by replacing the current pumps with one with a higher rating to allow abstraction up to the licenced amount as groundwater levels continue to recede.

### Construction

Construction effects are anticipated to be either neutral or slight adverse. Slight adverse effects are anticipated in respect of Objectives 1, 3, 4, 5, and 10, and are in relation to construction activities potentially affecting habitats or species and water quality, resulting in air, noise and greenhouse gas emissions, and use of new resources and materials. These effects are anticipated to be small in scale, short term and temporary, and confined to the local area.

In respect of Objective 1, mitigation proposed includes best practice methods, including pollution control, to minimise disturbance effects and habitat loss, and implementation of a robust CEMP are recommended. Best practice methods are also recommended for Objectives 4, 7, 8 and 11 to reduce adverse effects on air quality, landscape, cultural heritage and built assets and infrastructure. The reuse of excavated material and use of trenchless techniques during construction (Obj. 10) and implementation of a Traffic Management Plan (Obj. 11) should both be considered.



Operation

The following significant impacts are anticipated during the operation phase:

SEA Objective	Assessment category	Description of impact
Objective 1 - To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain	Moderate adverse	During operation, there is a risk of water quality issues such as increased turbidity or nitrates, which could impact sensitive species. Groundwater Dependent Terrestrial Ecosystems (GWDTEs) may also be impacted by reduced groundwater flows during operation of the option.
Objective 3 - To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	Moderate adverse	During operation, there is a risk that turbidity, nitrate or other water quality issues could materialise when pumping under low groundwater levels. Changes to abstraction can mobilise older, mineral rich water and there is potential for a deterioration in drinking water quality and increased treatment requirements during operation of the option. In terms of water quantity, pumping more groundwater may reduce baseflows to rivers and streams and cause lower river flows. The option may also increase abstraction from deeper aquifer zones, reducing groundwater levels and potentially leading to longer recovery times after drought.

Slight adverse effects have been identified in relation to soil (Obj. 2) as greater abstraction of groundwater may remove moisture from the soil, causing it to dry and increase the risk of erosion. Slight adverse effects have also been identified for heritage (Obj. 8) due to the potential impacts on waterlogged historic remains, as well as Objectives 5 and 10 as energy demand may increase if a higher-rated pump is installed, contributing to resource demand and greenhouse gas emissions.

In relation to slight beneficial effects, it is anticipated that the Option will support water quantity by improving abstraction efficiency and reducing stress on surrounding waterbodies (Obj. 3), maintain water supply and reduce pressure on existing systems supporting infrastructure resilience (Obj. 6), improve public health and wellbeing by helping to maintain water supply during drought conditions (Obj. 9) and ensure this source remains a valued asset (Obj. 11).

All operational effects are considered small in scale, temporary and confined to the local area. Mitigation is suggested in relation to Objectives 1 and 3 where further assessment and monitoring will be required to understand potential impacts, Objective 5 where the use of renewables for energy supply during operation should be investigated and Objective 8 where impacts through lowering of the water table on any heritage assets (including non-designated heritage assets) that are waterlogged may be investigated via engagement with heritage specialist.

### 9.4.7 Changing Pump at Source R

Source R provides an individual annual licence quantity of 22MI/d from 3 boreholes and forms part of the Source Q Group Licence (Source Q, Source R, Source S and Source T) which has an annual average licence rate of 28.38MI/d.



The 3 boreholes Deepest Advisable Pumping Water Level (DAPWL) sits at 17mAOD (BH1) and 18mAOD (BH2). The pump for BH1 sits at -13.9mAOD and -12.7mAOD for BH2. BH3 is not currently in service. The constraint at this source during low groundwater level is the operational pump capacity. The current pumps would not be able to cope with the increase in hydraulic head as groundwater levels falls past a certain point.

The drought option for Source R is to remove the constraint by replacing the current pumps with ones with a higher rating to allow abstraction up to the licenced amount as groundwater levels continue to recede.

### Construction

Construction effects are anticipated to be either neutral or slight adverse. Slight adverse effects are anticipated in respect of Objectives 1, 3, 4, 5, and 10, and are in relation to construction activities potentially affecting habitats or species and water quality, resulting in air, noise and greenhouse gas emissions, and use of new resources and materials. These effects are anticipated to be small in scale, short term and temporary, and confined to the local area.

In respect of Objective 1, mitigation proposed includes best practice methods, including pollution control, to minimise disturbance effects and habitat loss, and implementation of a robust CEMP are recommended. Best practice methods are also recommended for to Objectives 4, 7, 8 and 11 to reduce adverse effects on air quality, landscape, cultural heritage and built assets and infrastructure. The reuse of excavated material and use of trenchless techniques during construction (Obj. 10) and implementation of a Traffic Management Plan (Obj. 11) should both be considered.

### Operation

The following significant impacts are anticipated during the operation phase:

<b>SEA Objective</b>	<b>Assessment category</b>	<b>Description of impact</b>
Objective 1 - To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain	Moderate adverse	During operation, there is a risk of water quality issues such as increased turbidity or nitrates, which could impact sensitive species. Groundwater Dependent Terrestrial Ecosystems (GWDTEs) may also be impacted by reduced groundwater flows during operation of the option.
Objective 3 - To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	Moderate adverse	During operation, there is a risk that turbidity, nitrate or other water quality issues could materialise when pumping under low groundwater levels. Changes to abstraction can mobilise older, mineral rich water and there is potential for a deterioration in drinking water quality and increased treatment requirements during operation of the option. In terms of water quantity, pumping more groundwater may reduce baseflows to rivers and streams and cause lower river flows. The option may also increase abstraction from deeper aquifer zones, reducing groundwater levels and potentially leading to longer recovery times after drought.

Slight adverse effects have been identified in relation to soil (Obj. 2) as greater abstraction of groundwater may remove moisture from the soil, causing it to dry and increase the risk of erosion. Slight adverse effects have also



been identified for heritage (Obj. 8) due to the potential impacts on waterlogged historic remains, as well as Objectives 5 and 10 as energy demand may increase if a higher-rated pump is installed, contributing to resource demand and greenhouse gas emissions.

In relation to slight beneficial effects, it is anticipated that the Option will support water quantity by improving abstraction efficiency and reducing stress on surrounding waterbodies (Obj. 3), maintain water supply and reduce pressure on existing systems supporting infrastructure resilience (Obj. 6), improve public health and wellbeing by helping to maintain water supply during drought conditions (Obj. 9) and ensure this source remains a valued asset (Obj. 11).

All operational effects are considered small in scale, temporary and confined to the local area. Mitigation is suggested in relation to Objectives 1 and 3 where further assessment and monitoring will be required to understand potential impacts, Objective 5 where the use of renewables for energy supply during operation should be investigated and Objective 8 where impacts through lowering of the water table on any heritage assets (including non-designated heritage assets) that are waterlogged may be investigated via engagement with heritage specialist.



# 10. Mitigation

## 10.1 Introduction

The term mitigation encompasses any approach that is aimed at preventing, reducing or offsetting any significant adverse environmental effects that have been identified. In practice, a range of measures applying one or more of these approaches is likely to be considered in mitigating any significant adverse effects predicted as a result of implementing the Drought Plan. In addition, it is also important to consider measures aimed at enhancing positive effects. All such measures are generally referred to as mitigation measures.

However, the emphasis should be in the first instance on proactive avoidance of adverse effects. Only once alternative options or approaches to avoiding an effect have been examined, should mitigation then examine ways of reducing the scale / importance of the effect.

Mitigation can take a wide range of forms, including:

- Refining Intervention measures in order to improve the likelihood of positive effects and to minimise adverse effects;
- Technical measures (such as setting guidelines) to be applied during the implementation phase;
- Identifying issues to be addressed in project assessment, such as Environmental Impact Assessment and the development of Environmental Management Plans for certain projects or types of project;
- Proposals for changing other plans and programmes; and
- Contingency arrangements for dealing with possible adverse effects

## 10.2 Mitigation approaches applied through the SEA

A number of mitigation approaches have been used throughout the development of the Drought Plan, in order to mitigate potential effects (significant or otherwise). Of note is that within a number of Options, 'embedded mitigation' has been considered as part of the assessment process i.e. 'Embedded mitigation' is mitigation that has been incorporated into the development of the Option and is set out for each Option in the tables below. Through the SEA process, and following assessment, further 'additional mitigation' has also been identified and this is also set out in Table 10-1 to Table 10-9. 'Additional mitigation' is mitigation that is required to address specific issues relating to significant effects in addition to 'embedded mitigation' and identified through the SEA process.

No additional mitigation is proposed for the Temporary Use Bans (TUBs), Pressure Management or Enhanced Communications Campaign options.



**Table 10-1 - Changing Pump at Source T Mitigation**

<b>Changing Pump at Source T</b>	
<b>Embedded Mitigation considered in Option assessment</b>	
None Identified	
<b>Additional Mitigation derived from Option assessment</b>	
To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain	Best practice methods to be implemented to minimise disturbance effects and habitat loss. During pump lowering or replacement, pollution control best practices including spill kits, drip trays, and controlled storage of fuels and chemicals, will be applied at all times. This is expected to include implementation of a robust CEMP which outlines measures to protect areas of biodiversity value such as pre-construction ecological checks, seasonal timing controls and biosecurity protocols.  Further assessment and monitoring of ecological indicators will be required to understand the effects during operation.
To protect and enhance the functionality, quantity and quality of soils	None identified
To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	Further hydrogeological assessment and monitoring of groundwater levels and river flows is required.
To reduce and minimise air and noise emissions	Best practice mitigation measures implemented during construction. This is expected to include implementation of a robust CEMP which outlines measures such as use of low noise and low emissions vehicles and equipment.
To achieve Portsmouth Water's target of reducing carbon emissions to Net Zero by 2030 and contribute to national target of Net Zero by 2050	Investigate use of renewables during operation for energy supply.
To reduce vulnerability of built infrastructure to climate change risks and hazards	None identified
To conserve, protect and enhance landscape, townscape and seascape character and visual amenity	Best practicable means to minimise visual intrusion during construction



To conserve, protect and enhance heritage assets and the historic environment, including archaeological remains	Best practice measures to be implemented to minimise setting effects during construction and consideration of unexpected heritage discovery in CEMP. Impacts through lowering of the water table on any heritage assets (including non-designated heritage assets) that are waterlogged may be investigated via engagement with heritage specialist
To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	None identified
To minimise resource use and waste production	Reuse excavated material and consider use of trenchless techniques during construction
To avoid negative effects on built assets / infrastructure	Best practice measures including implementation of a Traffic Management Plan to be considered to minimise disturbance during construction

**Table 10-2 - Changing Pump at Source Q Mitigation**

<b>Changing Pump at Source Q</b>	
<b>Embedded Mitigation considered in Option assessment</b>	
None Identified	
<b>Additional Mitigation derived from Option assessment</b>	
To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain	Best practice methods to be implemented to minimise disturbance effects and habitat loss. During pump lowering or replacement, pollution control best practices including spill kits, drip trays, and controlled storage of fuels and chemicals, will be applied at all times. This is expected to include implementation of a robust CEMP which outlines measures to protect areas of biodiversity value such as pre-construction ecological checks, seasonal timing controls and biosecurity protocols. Further assessment and monitoring of ecological indicators will be required to understand the effects during operation.
To protect and enhance the functionality, quantity and quality of soils	None identified



To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	Further hydrogeological assessment and monitoring of groundwater levels and river flows is required.
To reduce and minimise air and noise emissions	Best practice mitigation measures implemented during construction. This is expected to include implementation of a robust CEMP which outlines measures such as use of low noise and low emissions vehicles and equipment.
To achieve Portsmouth Water's target of reducing carbon emissions to Net Zero by 2030 and contribute to national target of Net Zero by 2050	Investigate use of renewables during operation for energy supply.
To reduce vulnerability of built infrastructure to climate change risks and hazards	None identified
To conserve, protect and enhance landscape, townscape and seascape character and visual amenity	Best practicable means to minimise visual intrusion during construction.
To conserve, protect and enhance heritage assets and the historic environment, including archaeological remains	Best practice measures to be implemented to minimise setting effects during construction and consideration of unexpected heritage discovery in CEMP. Impacts through lowering of the water table on any heritage assets (including non-designated heritage assets) that are waterlogged may be investigated via engagement with heritage specialist
To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	None identified
To minimise resource use and waste production	Reuse excavated material and consider use of trenchless techniques during construction
To avoid negative effects on built assets / infrastructure	Best practice measures including a Traffic Management Plan to be implemented to minimise disturbance during construction

**Table 10-3 - Changing Pump at Source D Mitigation**

<b>Changing Pump at Source D</b>
<b>Embedded Mitigation considered in Option assessment</b>
None Identified



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**Additional Mitigation derived from Option assessment**

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To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain	<p>Best practice methods to be implemented to minimise disturbance effects and habitat loss.</p> <p>During pump lowering or replacement, pollution control best practices including spill kits, drip trays, and controlled storage of fuels and chemicals, will be applied at all times. This is expected to include implementation of a robust CEMP which outlines measures to protect areas of biodiversity value such as pre-construction ecological checks, seasonal timing controls and biosecurity protocols.</p> <p>Further assessment and monitoring of ecological indicators will be required to understand the effects during operation.</p>
To protect and enhance the functionality, quantity and quality of soils	None identified
To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	Further hydrogeological assessment and monitoring of groundwater levels and river flows is required.
To reduce and minimise air and noise emissions	Best practice mitigation measures implemented during construction. This is expected to include implementation of a robust CEMP which outlines measures such as use of low noise and low emissions vehicles and equipment.
To achieve Portsmouth Water’s target of reducing carbon emissions to Net Zero by 2030 and contribute to national target of Net Zero by 2050	Investigate use of renewables during operation for energy supply.
To reduce vulnerability of built infrastructure to climate change risks and hazards	None identified
To conserve, protect and enhance landscape, townscape and seascape character and visual amenity	Best practicable means to minimise visual intrusion during construction.
To conserve, protect and enhance heritage assets and the historic environment, including archaeological remains	<p>Best practice measures to be implemented to minimise setting effects during construction and consideration of unexpected heritage discovery in CEMP.</p> <p>Impacts through lowering of the water table on any heritage assets (including non-designated heritage assets) that are waterlogged may be investigated via engagement with heritage specialist</p>



To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	None identified
To minimise resource use and waste production	Reuse excavated material and consider use of trenchless techniques during construction
To avoid negative effects on built assets / infrastructure	Best practice measures including a Traffic Management Plan to be implemented to minimise disturbance during construction

**Table 10-4 – Source S Drought Permit Mitigation**

**Source S Drought Permit**

**Embedded Mitigation considered in Option assessment**

None Identified

**Additional Mitigation derived from Option assessment**

To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain	<p>Best practice methods to be implemented to minimise disturbance effects and habitat loss.</p> <p>During pump lowering or replacement, pollution control best practices including spill kits, drip trays, and controlled storage of fuels and chemicals, will be applied at all times. This is expected to include implementation of a robust CEMP which outlines measures to protect areas of biodiversity value such as pre-construction ecological checks, seasonal timing controls and biosecurity protocols.</p> <p>Further assessment and monitoring of ecological indicators will be required to understand the effects during operation.</p> <p>Further specific mitigation is considered in the EAR.</p>
To protect and enhance the functionality, quantity and quality of soils	None identified
To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	<p>Further hydrogeological assessment and monitoring of groundwater levels and river flows is required.</p> <p>The risk of temporary deterioration in WFD status will be discussed with the Environment Agency in the event that the Source S drought permit needs to be implemented in a future drought. The</p>



	risks to WFD compliance will also be further assessed at this time to take account of any new evidence from new baseline data. Further specific mitigation is considered in the EAR.
To reduce and minimise air and noise emissions	Best practice mitigation measures implemented during construction. This is expected to include implementation of a robust CEMP which outlines measures such as use of low noise and low emissions vehicles and equipment.
To achieve Portsmouth Water's target of reducing carbon emissions to Net Zero by 2030 and contribute to national target of Net Zero by 2050	Investigate use of renewables during operation for energy supply.
To reduce vulnerability of built infrastructure to climate change risks and hazards	None identified
To conserve, protect and enhance landscape, townscape and seascape character and visual amenity	Best practicable means to minimise visual intrusion during construction.
To conserve, protect and enhance heritage assets and the historic environment, including archaeological remains	Best practice measures to be implemented to minimise setting effects during construction and consideration of unexpected heritage discovery in CEMP. Impacts through lowering of the water table on any heritage assets (including non-designated heritage assets) that are waterlogged may be investigated via engagement with heritage specialist. Recommendations arising from further modelling and assessment to be adopted in full.
To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	Further specific mitigation is considered in the EAR.
To minimise resource use and waste production	Reuse excavated material and consider use of trenchless techniques during construction
To avoid negative effects on built assets / infrastructure	Best practice measures including a Traffic Management Plan to be implemented to minimise disturbance during construction

**Table 10-5 - Changing Pump at Source F Mitigation**

**Changing Pump at Source F**



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**Embedded Mitigation considered in Option assessment**

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None Identified

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**Additional Mitigation derived from Option assessment**

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To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain

Best practice methods to be implemented to minimise disturbance effects and habitat loss. During pump lowering or replacement, pollution control best practices including spill kits, drip trays, and controlled storage of fuels and chemicals, will be applied at all times. This is expected to include implementation of a robust CEMP which outlines measures to protect areas of biodiversity value such as pre-construction ecological checks, seasonal timing controls and biosecurity protocols.

Further assessment and monitoring of ecological indicators will be required to understand the effects during operation.

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To protect and enhance the functionality, quantity and quality of soils

None identified

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To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies

Further hydrogeological assessment and monitoring of groundwater levels and river flows is required.

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To reduce and minimise air and noise emissions

Best practice mitigation measures implemented during construction. This is expected to include implementation of a robust CEMP which outlines measures such as use of low noise and low emissions vehicles and equipment.

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To achieve Portsmouth Water's target of reducing carbon emissions to Net Zero by 2030 and contribute to national target of Net Zero by 2050

Investigate use of renewables during operation for energy supply.

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To reduce vulnerability of built infrastructure to climate change risks and hazards

None identified

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To conserve, protect and enhance landscape, townscape and seascape character and visual amenity

Best practicable means to minimise visual intrusion during construction.

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To conserve, protect and enhance heritage assets and the historic environment, including archaeological remains

Best practice measures to be implemented to minimise setting effects during construction and consideration of unexpected heritage discovery in CEMP.

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	Impacts through lowering of the water table on any heritage assets (including non-designated heritage assets) that are waterlogged may be investigated via engagement with heritage specialist
To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	None identified
To minimise resource use and waste production	Reuse excavated material and consider use of trenchless techniques during construction
To avoid negative effects on built assets / infrastructure	Best practice measures including a Traffic Management Plan to be implemented to minimise disturbance during construction

**Table 10-6 - Changing Pump at Source H Mitigation**

<b>Changing Pump at Source H</b>	
<b>Embedded Mitigation considered in Option assessment</b>	
None Identified	
<b>Additional Mitigation derived from Option assessment</b>	
To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain	Best practice methods to be implemented to minimise disturbance effects and habitat loss. During pump lowering or replacement, pollution control best practices including spill kits, drip trays, and controlled storage of fuels and chemicals, will be applied at all times. This is expected to include implementation of a robust CEMP which outlines measures to protect areas of biodiversity value such as pre-construction ecological checks, seasonal timing controls and biosecurity protocols. Further assessment and monitoring of ecological indicators will be required to understand the effects during operation.
To protect and enhance the functionality, quantity and quality of soils	None identified
To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	Further hydrogeological assessment and monitoring of groundwater levels and river flows is required.



To reduce and minimise air and noise emissions	Best practice mitigation measures implemented during construction. This is expected to include implementation of a robust CEMP which outlines measures such as use of low noise and low emissions vehicles and equipment.
To achieve Portsmouth Water's target of reducing carbon emissions to Net Zero by 2030 and contribute to national target of Net Zero by 2050	Investigate use of renewables during operation for energy supply.
To reduce vulnerability of built infrastructure to climate change risks and hazards	None identified
To conserve, protect and enhance landscape, townscape and seascape character and visual amenity	Best practicable means to minimise visual intrusion during construction.
To conserve, protect and enhance heritage assets and the historic environment, including archaeological remains	Best practice measures to be implemented to minimise setting effects during construction and consideration of unexpected heritage discovery in CEMP. Impacts through lowering of the water table on any heritage assets (including non-designated heritage assets) that are waterlogged may be investigated via engagement with heritage specialist
To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	None identified
To minimise resource use and waste production	Reuse excavated material and consider use of trenchless techniques during construction
To avoid negative effects on built assets / infrastructure	Best practice measures including a Traffic Management Plan to be implemented to minimise disturbance during construction

**Table 10-7 - Changing Pump at Source R Mitigation**

<b>Changing Pump at Source R</b>
<b>Embedded Mitigation considered in Option assessment</b>
None Identified
<b>Additional Mitigation derived from Option assessment</b>



To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain	<p>Best practice methods to be implemented to minimise disturbance effects and habitat loss.</p> <p>During pump lowering or replacement, pollution control best practices including spill kits, drip trays, and controlled storage of fuels and chemicals, will be applied at all times. This is expected to include implementation of a robust CEMP which outlines measures to protect areas of biodiversity value such as pre-construction ecological checks, seasonal timing controls and biosecurity protocols.</p> <p>Further assessment and monitoring of ecological indicators will be required to understand the effects during operation.</p>
To protect and enhance the functionality, quantity and quality of soils	None identified
To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	Further hydrogeological assessment and monitoring of groundwater levels and river flows is required.
To reduce and minimise air and noise emissions	Best practice mitigation measures implemented during construction. This is expected to include implementation of a robust CEMP which outlines measures such as use of low noise and low emissions vehicles and equipment.
To achieve Portsmouth Water's target of reducing carbon emissions to Net Zero by 2030 and contribute to national target of Net Zero by 2050	Investigate use of renewables during operation for energy supply.
To reduce vulnerability of built infrastructure to climate change risks and hazards	None identified
To conserve, protect and enhance landscape, townscape and seascape character and visual amenity	Best practicable means to minimise visual intrusion during construction.
To conserve, protect and enhance heritage assets and the historic environment, including archaeological remains	<p>Best practice measures to be implemented to minimise setting effects during construction and consideration of unexpected heritage discovery in CEMP.</p> <p>Impacts through lowering of the water table on any heritage assets (including non-designated heritage assets) that are waterlogged may be investigated via engagement with heritage specialist</p>
To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	None identified



To minimise resource use and waste production	Reuse excavated material and consider use of trenchless techniques during construction
To avoid negative effects on built assets / infrastructure	Best practice measures including a Traffic Management Plan to be implemented to minimise disturbance during construction

**Table 10-8 – Enhanced Leakage Reduction Mitigation**

<b>Enhanced Leakage Reduction</b>	
<b>Embedded Mitigation considered in Option assessment</b>	
None Identified	
<b>Additional Mitigation derived from Option assessment</b>	
To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain	None identified
To protect and enhance the functionality, quantity and quality of soils	None identified
To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	None identified
To reduce and minimise air and noise emissions	Maintain plant and equipment. Use low or zero emissions equipment / plant.
To achieve Portsmouth Water’s target of reducing carbon emissions to Net Zero by 2030 and contribute to national target of Net Zero by 2050	None identified
To reduce vulnerability of built infrastructure to climate change risks and hazards	None identified
To conserve, protect and enhance landscape, townscape and seascape character and visual amenity	None identified



To conserve, protect and enhance heritage assets and the historic environment, including archaeological remains	None identified
To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	Community engagement. Maintain plant and equipment. Use of low emission or zero emission equipment / plant
To minimise resource use and waste production	None identified
To avoid negative effects on built assets / infrastructure	None identified

**Table 10-9 - Non-Essential Use Bans (NEUBs) Mitigation**

<b>Non-Essential Use Bans (NEUBs)</b>	
<b>Embedded Mitigation considered in Option assessment</b>	
None Identified	
<b>Additional Mitigation derived from Option assessment</b>	
To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain	Risk of INNS to be considered when banning washing of watercraft. Consider mandating of visual inspections to ensure no transfer of INNS
To protect and enhance the functionality, quantity and quality of soils	None identified
To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	None identified
To reduce and minimise air and noise emissions	None identified
To achieve Portsmouth Water's target of reducing carbon emissions to Net Zero by 2030 and contribute to national target of Net Zero by 2050	None identified



To reduce vulnerability of built infrastructure to climate change risks and hazards	None identified
To conserve, protect and enhance landscape, townscape and seascape character and visual amenity	None identified
To conserve, protect and enhance heritage assets and the historic environment, including archaeological remains	None identified
To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	Allowing allotments limited supplies of water and ensuring high levels of communication before, during and following the implementation of these measures will mitigate effects. Consider exemptions where dust suppression would alleviate impacts on particularly vulnerable groups e.g. construction works near hospitals, schools, nursery and care homes.
To minimise resource use and waste production	None identified
To avoid negative effects on built assets / infrastructure	None identified



# 11. Cumulative, synergistic and indirect effects

## 11.1 Introduction

Within SEA, there is a requirement to consider cumulative, synergistic and indirect effects of implementation of the Drought Plan. Cumulative effects arise where several proposals or elements individually may or may not have significant effect but in-combination have a significant effect due to spatial crowding or temporal overlap. Synergistic effects are when two or more effects act together to create an effect greater than the simple sum of the effects when acting alone. Secondary and indirect effects are effects that are not a direct result of the Drought Plan, but which occur away from the original effect or as the result of a complex pathway.

## 11.2 Likely cumulative effects

SEA Objectives which have the potential for cumulative effects have been identified (as required by the SEA Regulations) from the analysis of plans and programmes, the baseline data, consultation responses and an examination of the identified key issues and cumulative, synergistic and indirect effects have also been considered during the SEA.

## 11.3 In-Plan Cumulative Effects

The HRA reported that as a result of the outcome of the screening assessment, which identified that none of the options were assessed to have an LSE and were considered to have 'No Effect', there is also no scope for LSEs in combination, and an in-combination assessment was not undertaken. No within-plan in-combination effects were identified.

### 11.3.1 Construction

It is not possible to know at this stage precisely where measures taken under the Enhanced Leakage Reduction option will take place. Such activities and their consequent effects are anticipated to be small scale and will be localised to specific areas. It is also anticipated that in general such works would be undertaken at a wide spatial scale (at various locations across the Portsmouth area) and likely to be undertaken on a rolling programme, with little or no spatial overlap and undertaken at different times. As such demand side options have been excluded as unlikely to give rise to cumulative construction effects.

In terms of supply side options, it is considered that options within an approximate 1km distance of each other and with potentially overlapping construction periods are most likely to give rise to cumulative construction effects. It is however noted that due to the limited construction involved with the options proposed and their locations at existing pumping stations, cumulative effects are not anticipated.

### 11.3.2 Operation

It is anticipated that the demand side options noted in the Drought Plan 2027 will apply across the whole of the Portsmouth area and are anticipated to have cumulative beneficial effects from reducing the demand for water. For example, while demand side options such as NEUBs and TUBs would typically be implemented in a

phased, sequential manner, it is the intention that such measures will act to reduce pressure on water resources by reducing demand for water and as such, reduce the need for abstraction, treatment and onward pumping. This will act cumulatively across the Plan area and into nearby / linked resource areas. Savings in water would likely have cumulative beneficial effects in respect of resilience to biodiversity (Obj. 1), the water environment (Obj. 3), reducing carbon, air and carbon emissions (Obj. 4 and Obj. 5), climate change (Obj. 6), maintaining health and wellbeing (Obj. 9), as well as minimising resource use (Obj. 10). While some of the savings made are anticipated in themselves small and benefits would be slight, it is to be noted that cumulatively effects could be significant and of importance given that these will be implemented in a drought situation when the environment is naturally under stress. Other demand side measures would apply at all times and act cumulatively to continually reduce pressure on sources, with consequent permanent benefits for people and the environment.

The assessment of the Drought Plan options in Section 9 identifies the potential for adverse effects to arise during operation of the plan options individually. While post-mitigation effects are for the most part non-significant, it must be recognised that there remains the potential for significant adverse effects when operating in conjunction with one-another.

As there is the potential for the supply options within the Drought Plan to operate in conjunction with each other, there is a potential for adverse cumulative effects across a number of areas. Whilst not anticipated to be significant, cumulatively greater abstraction of groundwater will remove moisture from the soil, causing it to dry and increase the risk of erosion (Obj. 2). Similarly, there is the potential that lowering of the water table could result in cumulative adverse impacts on waterlogged historic remains (Obj. 8).

Significant adverse cumulative effects are possible in relation to biodiversity (Obj. 1) due to impacts such as to Groundwater Dependent Terrestrial Ecosystems (GWDTEs) as the operation of the options increases the water abstracted from the environment. Similarly, in terms of water quantity and quality (Obj. 3) cumulative adverse effects are possible due to the changes to abstraction which can mobilise older, mineral rich water and there is potential for a deterioration in drinking water quality and increased treatment requirements. In terms of water quantity, pumping more groundwater may reduce baseflows to rivers and streams and cause lower river flows as well as potentially leading to longer recovery times after drought.

It is considered that where the Drought Plan options are within 1km distance of each other there is increased potential to interact and give rise to cumulative effects during operation. Changing pump at Source Q and changing pump at Source R are approximately 0.9km from each other. However no significant cumulative effects have been identified during operation due to their proximity.

## 11.4 In-combination cumulative effects with other plans and projects

The SEA Regulations require that Portsmouth Water Drought Plan is assessed in combination with other plans and programmes.

The cumulative effects of the Drought Plan are difficult to accurately assess given the inherent uncertainties concerning future changes to baseline environmental conditions, future population and economic growth, the deliverability of some NSIPs (and the potential for new NSIPs to be brought forward), and the complexities associated with water resource planning at the regional level.

Cumulative effects may arise as a result of Portsmouth Water's Drought Plan interaction with a wide range of other plans and programmes including:

- Portsmouth Water's Water Resource Management Plan (2024);
- Portsmouth Local Plan (2021);
- Portsmouth City Local Plan (2006);
- East Hampshire Adopted Local Plan / Joint Core Strategy (2014);
- Gosport Borough Local Plan (2038);
- Action Plans including Somerstown and North Southsea Area Action Plan (2012);
- River Basin Management Plans including that for the South East River Basin District (2015);
- Joint Strategic Flood Risk Assessment (Partnership for Urban South Hampshire);
- Portsmouth Surface Water Management Plan;
- National Policy Statements (NPSs); and
- Nationally Significant Infrastructure Projects (NSIPs).

The above Plans have been considered as part of the SEA, for example to help identify baseline and are set out in Appendix B.

Within the above noted plans (as well as those not listed here), there are measures set out which could result in construction activities (of potentially significant scale), or operational plans. However, as noted previously, it is anticipated that construction activities related to Options within the Drought Plan will be small scale and of localised effect. A range of mitigation measures have been noted within this SEA which would act to reduce effects, many of which could be included in construction Environmental Management Plans – these would be further developed through detailed scheme design and would reflect conditions and context prevailing at that time. In addition, it is to be expected that all major infrastructure such as that which may arise from other Plans, will be developed within the appropriate Planning framework and will itself be subject to measures to ensure cumulative effects are addressed. As such, no significant cumulative effects are anticipated in respect of other plans in relation to any of the SEA Objectives at this stage.

A key element of the wider Portsmouth Water approach to water management is the development of the Havant Thicket reservoir. Clearly this project will require significant construction activities, but it is anticipated that there will be no construction cumulative effects for the reasons outlined above (the Options within the Drought Plan being relatively small scale in construction / refurbishment terms, the mitigation measures identified and the expectation of the reservoir being developed within a strictly controlled construction and planning framework).

It is considered that there will be no cumulative effects between the Demand Management Options within Drought Plan and the Havant Thicket development, other than these will increase the availability of water from the reservoir (by reducing demand across the water resource zone).

## 11.4.1 Portsmouth Water WRMP24

As noted in Chapter 1-2, the Drought Plan must be aligned with Portsmouth Water's WRMP24. An in-combination assessment of the cumulative effects was undertaken as part of the SEA for WRMP24, which considered the potential effects of Portsmouth Water's proposals. The ICA included SEA, HRA and WFD considerations<sup>7</sup>.

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<sup>7</sup> [1D-fWRMP-SEA-Report-v7.0\\_published\\_final.pdf](#)

The potential for cumulative effects between options within the WRMP24 was examined, with a number of Options identified as having potential risk. These were examined in turn and identified cumulative adverse effects related to a range of environmental issues, particularly biodiversity, water, soil, population and material assets. On the whole, it was considered that these effects would be slight, with mitigation being able to address the effects effectively. For example, it is anticipated that Best practice construction measures would be implemented including provision of Construction Environmental Management Plans (CEMP) which outline measures to protect the water environment. This would require the use of spill kits and other measures to be taken in the event of a pollution incident. It is noted that most construction activities would be limited in scale to a particular area and will likely not overlap in a timeframe with other Schemes.

Similarly, during operation, the potential for cumulative effects between options was identified. For the most part, those adverse effects identified related to the emission of greenhouse gases and the water environment. Further assessment, or amendments to option design would be required through the design and planning process but it is anticipated that effects could be managed. For example, a recommendation was made to investigate the sourcing of renewable energy to reduce emissions. Some options, such as those related to demand management, while potentially small in themselves, would act cumulatively to reduce the need for water and help to reduce the pressure on abstraction in water stressed areas.

Further detail is provided in Portsmouth Water's WRMP24 Appendix 1D - Strategic Environmental Assessment.

## 11.4.2 Nationally Significant Infrastructure Projects

Review of the National Infrastructure Planning website<sup>8</sup> suggests four NSIPs are considered likely to interact with the Portsmouth Water study area and are as follows:

- AQUIND Interconnector (7.3km from nearest Portsmouth Water Option – Changing pumps at Source H)
- Development of AQUIND Interconnector with a nominal net capacity of 2000MW between Great Britain and France located off the coast of Portsmouth offshore and between Portsmouth and Lovedean substation onshore.
- Rampion 2 Offshore Wind Farm (8.5km from nearest Portsmouth Water Option – Changing pumps at Source Q)
- Offshore wind farm with up to 90 wind turbines, associated foundations and all the electrical infrastructure required to transmit the power into the national electricity network at Bolney in Mid Sussex.
- Southampton to London Pipeline Project (approximately 1km from nearest Portsmouth Water Option – Changing Pumps at Source D)
- The Southampton to London Pipeline Project aims to replace 90km of Esso Petroleum Company Limited's 105km aviation fuel pipeline that runs from Fawley Refinery near Southampton to Esso's West London Terminal Storage Facility in Hounslow.
- Hampshire Water Transfer and Water Recycling Project (approximately 0.3km from nearest Portsmouth Water Option – Changing Pumps at Source D)
- The proposed development comprises a combination of both water transfer and water recycling technology, with a proposed water recycling plant and associated pipeline transferring recycled water to the planned Havant Thicket Reservoir. The proposed development also comprises a transfer pipeline

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<sup>8</sup> <https://national-infrastructure-consenting.planninginspectorate.gov.uk/project-search>



between Havant Thicket Reservoir and Southern Water's Otterbourne Water Supply Works (WSW) in order to serve its Western supply area in Hampshire.

Due to the nature of these projects and their proximity to the Portsmouth Water Drought Plan options, no cumulative effects are identified in relation to the AQUIND Interconnector, Rampion 2 Offshore Wind Farm or Southampton to London Pipeline Project.

In relation to Hampshire Water Transfer and Water Recycling Project, there is the potential for minor cumulative effects during construction such as increased noise (Obj. 4) or increased disruption on local roads due to construction traffic (Obj. 11). Significant cumulative effects are not anticipated during operation.

### **11.4.3 Strategic Resource Option**

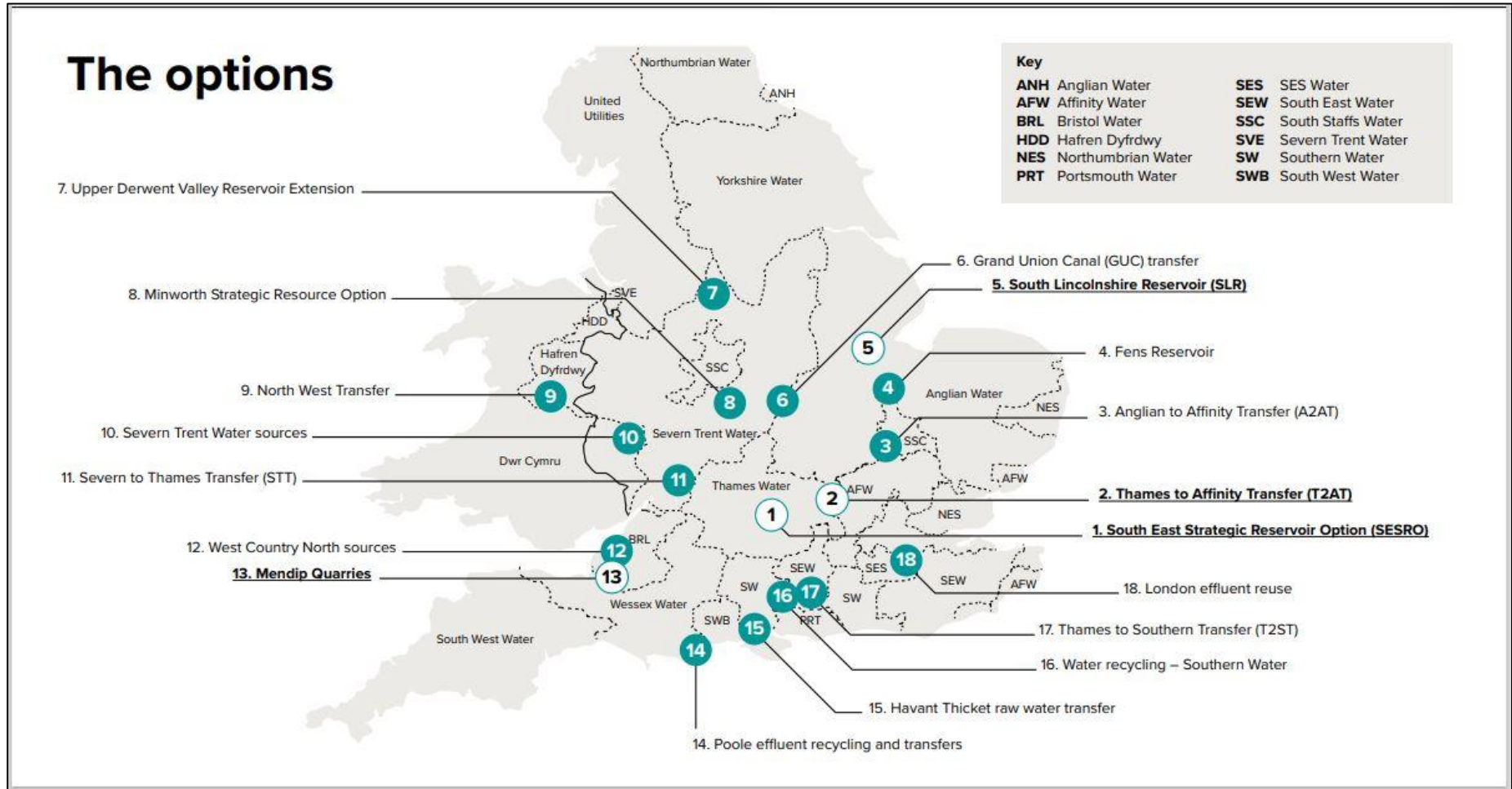
SRO's are large infrastructure schemes, that are developed between water companies and with RAPID to ensure water supplies across the network, often in the form of reservoirs and bulk water transfers. Their locations are shown in Figure 11-1 below.

No SROs have been identified within the Portsmouth Water plan area and as such the potential for significant cumulative effects as a result of SRO development is reduced. Note that neighbouring Southern Water are progressing Hampshire Water Transfer and Water Recycling project which is an SRO. This option has been captured through review of NSIPs in Section 11.4.1.





Figure 11-1 - Strategic Resource Option Locations



Source: Safeguarding England's water future, Mott Macdonald



## 11.5 Cumulative effects with neighbouring water companies

A key focus of the in-combination assessment with other plans and policies is that of neighbouring water companies, specifically supply options contained in their respective Drought Plans. There is potential for Portsmouth Water's Drought Plan options to interact cumulatively either through construction or operation with options contained in the following, neighbouring water companies Drought Plans:

- Southern Water, and
- South East Water.

Portsmouth Water have engaged with both of the neighbouring water companies in order to understand the nature of their respective Drought Plans, the options contained and the likely effects arising through assessments including SEA, HRA, and other supporting technical work.

### 11.5.1 Southern Water

**THIS SECTION IS TO BE COMPLETED POST DRAFT PLAN SUBMISSION AS CONFIRMATION OF, AND DETAILS ON SOUTHERN WATER'S DROUGHT PLAN OPTIONS BECOMES AVAILABLE**

**POTENTIAL FOR IN-COMBINATION EFFECTS WITH SOUTHERN WATER'S RIVER ITCHEN DROUGHT PERMIT OPTION ARE NOTED AND WILL BE CONSIDERED WITHIN THIS ASSESSMENT.**

### 11.5.2 South East Water Drought Plan

**THIS SECTION IS TO BE COMPLETED POST DRAFT PLAN SUBMISSION AS CONFIRMATION OF, AND DETAILS ON SEW'S DROUGHT PLAN OPTIONS BECOMES AVAILABLE**

## 12. Monitoring

### 12.1 Introduction

The SEA Regulations state that those responsible for the Plan ‘shall monitor the significant environmental effects of the implementation of each plan or programme with the purpose of identifying unforeseen adverse effects at an early stage and being able to undertake appropriate remedial action’ (Part 4 Post Adoption Procedures Regulation 17). In addition, the Environmental Report should provide information on a ‘description of the measures envisaged concerning monitoring’ (Schedule 2 Information for Environmental Reports).

In line with the SEA Regulations, monitoring will cover significant effects of implementing the Drought Plan and it will involve measuring indicators that will enable the establishment of a causal link between the implementation of the Drought Plan and the likely significant effects (both positive and negative) being monitored.

### 12.2 Monitoring Programme

Table 12-1 sets out monitoring for the significant effects associated with particular SEA Objectives and which may not be fully identified through the monitoring set out in the Drought Plan or associated Environmental Assessment Reports. Note that for the most part, rather than being proscriptive at this stage, the requirements for monitoring will be further developed during the drought period in light of prevailing conditions and intensity of drought, through discussions with relevant authorities, including Natural England and the Environment Agency.

**Table 12-1 - Proposed Monitoring**

<b>Objective</b>	<b>Overview of typical effect</b>	<b>Requirement for monitoring</b>	<b>Monitoring Action</b>
Objective 1: To protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity and achieve biodiversity net gain	During operation, there is a risk of water quality issues which could impact sensitive species and GWDTEs may also be impacted by reduced groundwater flows.	Condition of specific protected sites (e.g. SACs and SPAs)	Pre drought, during operation of drought option and post implementation
		Biological monitoring (GWDTEs, macroinvertebrates, macrophytes, fisheries, Bird surveys)	Pre drought, during operation of drought option and post implementation
Objective 3: To protect and enhance the quantity and quality of surface, groundwater, estuarine and coastal waterbodies	There is a risk that turbidity, nitrate or other water quality issues could materialise. There is potential for a deterioration in drinking water quality and increased treatment requirements during operation. In terms of water quantity, pumping more groundwater may reduce baseflows to rivers and streams and cause lower river flows. Increased abstraction may lead to longer recovery times after drought.	Changes in WFD condition (positive or negative) of relevant waterbodies.	Pre drought, during operation of drought option and post implementation
		Groundwater and river flow and level characteristics	Pre drought, during operation of drought option and post implementation
Objective 9: To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	Source S Drought Permit - impacts on Park Bottom tributary Chalk Springs Fishery and loss of a recreational resource.	Approximation of the number of each fish species (e.g. 10s, 100s) in each ponded reach/water body	Pre drought, during operation of drought option and post implementation

## 13. Summary and Conclusions

Because drought plans (prepared for water management) set the framework for future development consents of projects listed in Annex II of the EIA Directive (water abstraction), drought plans meet the description set out in reg. 5(2) of the SEA Regulations. As such, an assessment (pursuant to Part 3 of the Environmental Assessment of Plans and Programmes Regulations 2004) is automatically required by reg. 5(1).

In the Drought Plan a series of options were set out which can be implemented in a phased approach to address a developing drought situation i.e. the Drought Plan sets out options which Portsmouth Water can consider taking in response to drought events of different severities.

Drought permits and drought 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. Portsmouth Water's WRMP19 demonstrated that even in the most severe drought scenarios, only a single drought permit may be required, at Source S. This drought permit has been included in previous WRMPs and is still the only supply-side drought permit option within the most recently published WRMP24. The drought permit was chosen as it has the least likely impact upon the environment.

In the context of Drought Planning, maintaining a supply of potable water is vital in order to ensure continued public health and safety. It is also important that this is done in a manner in which the environment is protected as much as possible during a period in which many environmental elements will already be under stress due to the prevailing climatic conditions. In recognition of this and the emergency nature of Drought Planning, in relation to this Drought Plan, each individual drought Option is considered to be a reasonable alternative.

Assessment of the Options outlined considered both construction effects and those which are anticipated to occur during operation of the Option. A series of mitigation measures were also identified, with the aim of reducing or nullifying any adverse effects, while potentially maximising any beneficial effects from the Option.

In respect of the five demand side options, no significant effects are anticipated during construction for any of the options. During operation, significant beneficial effects are anticipated for Enhanced Leakage Reduction and Pressure management. For both options this is in relation to water (Obj. 3) due to minimising water loss across the supply network and conserving water resources as well as reducing unintended discharge and for resource use (Obj. 10) as they will minimise resource consumption and support more efficient use of infrastructure. Significant beneficial effects are also anticipated for NEUBs and TUBs in relation to water (Obj. 3) as they will reduce non-essential water use, lower demand on public supply and result in decreased abstraction.

For the seven supply side options, no significant effects have been identified during construction due to the limited extent of the construction works anticipated and their location within an existing site. During operation of these options, significant adverse effects are anticipated for biodiversity (Obj. 1) as there is a risk of water quality issues such as increased turbidity or nitrates, which could impact sensitive species. Groundwater Dependent Terrestrial Ecosystems (GWDTEs) may also be impacted by reduced groundwater flows during operation of the options. Additionally, for the Source S option the EAR identified potentially significant effects in terms of Arundel Park SSSI unit 2, Arun Valley Watersfield to Arundel LWS, NERC habitats (Reedbeds, lowland fens), macroinvertebrates, macrophytes, water vole, New Zealand pygmyweed (macrophyte INNS) and Nuttall's waterweed (macrophyte INNS). Significant effects are also anticipated for all the supply options in terms of water (Obj. 3) during operation as there is a risk that turbidity, nitrate or other water quality issues could materialise when pumping under low groundwater levels. Changes to abstraction can mobilise older, mineral rich water and there is potential for a deterioration in drinking water quality and increased treatment requirements during operation of the option. In terms of water quantity, pumping more groundwater may reduce baseflows to rivers and streams and cause lower river flows. The options may also increase abstraction from deeper aquifer zones, reducing groundwater levels and

potentially leading to longer recovery times after drought. The Source S EAR also sets out that there may be a medium risk of temporary deterioration in quantitative status owing to the GWDTes test and major impacts are likely at Park Bottom tributary as the due to large flow reduction. Significant adverse impacts are also identified for Source S in terms of Population and Health (Obj. 9) as the EAR identified impacts on the Park Bottom tributary Chalk Springs Fishery and subsequent impacts on fishing.

Mitigation has been proposed to alleviate effects of the Drought Plan where feasible.

It is anticipated that the demand side options noted in the Drought Plan 2027 will apply across the whole of the Portsmouth area and are anticipated to have cumulative beneficial effects from reducing the demand for water. For example, while demand side options such as NEUBs and TUBs would typically be implemented in a phased, sequential manner, it is the intention that such measures will act to reduce pressure on water resources by reducing demand for water and as such, reduce the need for abstraction, treatment and onward pumping. This will act cumulatively across the Plan area and into nearby / linked resource areas. Savings in water would likely have cumulative beneficial effects in respect of resilience to biodiversity (Obj. 1), the water environment (Obj. 3), reducing carbon, air and carbon emissions (Obj. 4 and Obj. 5), climate change (Obj. 6), maintaining health and wellbeing (Obj. 9), as well as minimising resource use (Obj. 10). While some of the savings made are anticipated in themselves small and benefits would be slight, it is to be noted that cumulatively effects could be significant and of importance given that these will be implemented in a drought situation when the environment is naturally under stress. Other demand side measures would apply at all times and act cumulatively to continually reduce pressure on sources, with consequent permanent benefits for people and the environment.

As there is the potential for the supply options within the Drought Plan to operate in conjunction with each other, there is a potential for adverse cumulative effects across a number of areas. Significant adverse cumulative effects are possible in relation to biodiversity (Obj. 1) due to impacts such as to Groundwater Dependent Terrestrial Ecosystems (GWDTes) as the operation of the options increases the water abstracted from the environment. Similarly, in terms of water quantity and quality (Obj. 3) cumulative adverse effects are possible due to the changes to abstraction which can mobilise older, mineral rich water and there is potential for a deterioration in drinking water quality and increased treatment requirements. In terms of water quantity, pumping more groundwater may reduce baseflows to rivers and streams and cause lower river flows as well as potentially leading to longer recovery times after drought.

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