Southern Water Services

TEST SURFACE WATER LICENCE 11/42/18.16/54 STAGE 0.1 DROUGHT ORDER 2025

Report to inform an assessment under Regulations 63 and 64 of the Conservation of Habitats and Species Regulations 2017

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CONFIDENTIAL

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1 INTRODUCTION

1.1 PURPOSE OF THIS REPORT

1.1.1. This report presents information to inform an assessment under Regulations 63 and 64 of the Conservation of Habitats and Species Regulations 2017 (a Habitats Regulations Assessment ("HRA")) of the effects of a Stage 0.1 Drought Order[1] application for Southern Water Service Limited's ("SWS") Test Surface Water abstraction licence, at Testwood, on Habitats Sites[2]. It has been produced for the purpose of providing the competent authority, in this case the Secretary of State for Environment, Food and Rural Affairs, with the information necessary to enable compliance with its duties under the Conservation of Habitats and Species Regulations 2017 (as amended) ("the Habitats Regulations")[3].

1.2 BACKGROUND

1.2.1. In March 2018, the Itchen Licences were the subject of the Hampshire Sustainable Abstraction Public Inquiry ("the Hampshire Inquiry"). The conditions of the Itchen Licences were amended to reduce the impact of abstraction on the River Itchen, a European Designated Site under the Habitats Regulations.

1.2.2. As a direct consequence of changes to the Itchen Licences (along with other licences), SWS lost circa 166 Ml/d, of deployable output in its Western Area, as detailed in their Water Resource Management Plan 2019. This was with a reduction of 105 Ml/d at Testwood and 61 Ml/d in the Itchen. This created a significant risk for SWS to meet its supply duties under Section 37 Water Industry Act 1991("WIA") during drought.

1.2.3. An agreement was reached under Section 20 of the Water Resources Act 1991 (WRA) ("the Section 20 Agreement"), between SWS and the Environment Agency ("EA"). The Section 20 Agreement recognised the supply risk and put in place an interim abstraction scheme reliant on drought permits and orders while long-term alternative supply infrastructure was put in place. The Section 20 Agreement outlines how the requirements of both the Habitats Regulations (and also the Water Environment (Water Framework Directive)(England and Wales) Regulations 2017 (WFD Regulations)) will still be met under conditions such as drought, through an agreed derogation process in the event that a drought application is required. The derogation for the drought interventions recognises the lack of available alternative options and the public supply duty as an imperative reason of overriding public interest (IROPI). Natural England ("NE"), a supporting

[1] The term Stage 0.1 Drought Order is used for this application as it is applying for the same relaxation of the HoF as would otherwise have been the subject of a Drought Permit application pursuant to the Section 20 Agreement.
[2] Habitats Sites (also known as European sites) include, Special Areas of Conservation (SACs) candidate Special Areas of Conservation (cSACs) and Special Protection Areas (SPAs). As a matter of policy, the UK Government also considers possible SACs (pSACs), potential SPAs (pSPAs), Ramsar sites and, in England, proposed Ramsar sites as European sites.
[3] The 2017 Regulations have been amended by the *Conservation of Habitats and Species (Amendment) (EU Exit) Regulations* 2019 to reflect the UK's exit from the EU, although these largely carried forward the provisions and terminology of the 2017 Regulations and do not fundamentally alter their interpretation. This report therefore primarily refers to the 2017 Regulations and (where appropriate for clarity) the relevant provisions of the Habitats Directive.

regulator in this process, were involved in the agreement of a package of environmental compensation measures, and are involved in the oversight of the mitigation/compensation and monitoring packages.

1.2.4. The mitigation and compensation packages defined for Itchen and Test related drought options were based on an understanding of the status of the River Itchen SAC interest features at the time and thus it was agreed that delivery of the mitigation and compensation defined in the packages would be sufficient to mitigate and where any residual impact remained, compensate for, predicted adverse effects on the SAC related to the expected drought applications. However, since the Section 20 Agreement was signed, genetic analysis has indicated the salmon population in the Itchen is part of a metapopulation with those in the Test and Meon, and the status of the salmon population has changed to 'at risk' such that the Section 20 Agreement mitigation/compensation packages in respect of potential effects on the Itchen and Test are not now deemed to be sufficient by the EA and NE. As a result of this, and due to upcoming licence renewals, since mid-2024 SWS has been working on an enhanced list of mitigation and compensation measures that will be implemented to further reduce and / or offset the potential effects of drought permits/orders that may be needed on both the Itchen and the Test and also on-going abstraction necessary until the new strategic supply options are available (Bulk import: Havant Thicket Reservoir to Otterbourne WSW (90Ml/d) and Recycling: Recharge of Havant Thicket from recycled water from Budds Farm (60Ml/d), both currently predicted to be in place from 2035). SWS has no ability to reduce abstraction in the interim.

1.2.5. Until the new strategic supply options are available therefore, assessments for any drought permits/orders related to the Itchen or Test need to take account of both the defined Section 20 mitigation/compensation measures and additional measures that are now considered necessary to mitigate/compensate for effects on the Habitats sites.

1.3 TEST SURFACE WATER ABSTRACTION

ABSTRACTION LICENCE DETAILS

1.3.1. SWS abstracts from the River Test, approximately 1.4 km upstream of the normal tidal limit (NTL). The abstraction licence was revised in March 2019 following the outcome of the public inquiry into the EA's proposed licence changes of SWS licences for abstractions from the River Itchen and River Test (2018 Public Inquiry). The current conditions of SWS's River Test abstraction licence are detailed in Table 1-1 below.

Table 1-1 - River Test abstraction licence details

Licence number	Daily (Ml/d)	Annual (Ml/d)	Hands Off Flow (HoF) (Ml/d)	HoF location / calculation
11/42/18.16/546	80	29,200	355	Total Test Flow - "sum of flow at Testwood Bridge, Test Back Carrier and Conagar Bridge" (NB for the purpose of day-to-day compliance checks and forecasting, the sum of the flows at gauging stations at Testwood (Great Test), M27 TV1 (Test carrier), Conagar Bridge (Little Test) and Ower (Blackwater) is used to derive Test Total Flow)

THE STAGE 0.1 DROUGHT ORDER

1.3.2. Water resources modelling using SWS's Western Area 'Aquator' water resources model indicates that, under the current River Test abstraction licence conditions (Table 1-1) there would be a significant supply deficit in the Western Area (Hampshire and Isle of Wight) under a range of low flow conditions. Therefore, there is a need for SWS to apply to relax the HoF from 355Ml/d to 265Ml/d as detailed in Table 1-2, to help maintain public water supplies to the Western Area during these low flow conditions.

1.3.3. In accordance with the Section 20 Agreement, if the proposed mitigation measures were deemed to fully off-set the potential adverse effects of a relaxation of the HoF, as detailed in Table 1-2, SWS would make an application to the Environment Agency for a Drought Permit. An assessment was undertaken under Regulations 63 and 64 of the Conservation of Habitats and Species Regulations 2017 for a proposed Test Surface Water Drought Permit (WSP, 2025). The Stage 2 assessment for the River Itchen SAC concluded that it is not possible to conclude there will be no adverse effect on site integrity for the River Itchen SAC, even with mitigation measures in place. Therefore, a Stage 3 Assessment of Alternative Solutions was undertaken, which concluded that the only feasible alternative, given the conclusion in respect of the River Itchen SAC, was to apply for a derogation from the Conservation of Habitats and Species Regulations 2017 under Regulation 64.

1.3.4. Such derogations may only be agreed by the Secretary of State for Environment, Food and Rural Affairs. Therefore, SWS seeks an appropriate assessment of the implications of the relaxation of the HoF. SWS is of the view that the Secretary of State for Environment, Food and Rural Affairs can be satisfied that the relaxation must be carried out for imperative reasons of overriding public interest, in particular reasons relating to human health and public safety and the Secretary of State may make the Drought Order in accordance with his powers under the Water Resources Act 1991.

1.3.5. In this case, this is being referred to as a Test Surface Water Stage 0.1 Drought Order, as it is applying for the same relaxation of the HoF as would otherwise have been the subject of an application for a Drought Permit pursuant to the Section 20 Agreement. A potential Stage 1 Drought Order would entail a further reduction of the HoF and is not discussed further here.

Table 1-2 - Test Surface Water Drought Order summary

	Stage 0.1 Drought Order Details
Receiving watercourse	River Test
Abstraction sources	Testwood WSW
Normal HoF / licence details	355 Ml/d (licence condition)
HoF control	Flow at the Total Test Flow (TTF)
Proposed drought action	Relax HoF to 265 Ml/d Assumes Coleridge Award split[4] is enforced – this may require specific provisions to be included in the Test Surface Water Drought Permit, along with potential additional legal provisions about the operation of other control structures. Total Test Flow (TTF) is not affected by the Coleridge Award split, but the operation of this and other control structures do control flows between the Great and Little Test.
Permit or Order	Order
Yield (Ml/d)	Up to 80 Ml/d for extreme drought conditions

1.3.6. The lowered river flow condition does not mean that abstraction will be increased to reduce the flow to the lower limit; it only means that SWS may carry on abstracting to the flow of 265 Ml/d if necessary, depending on the recession of flows in the river.

1.3.7. The recession in flows on the River Test down to the hands-off flow condition of 355 Ml/d will determine when SWS needs the Stage 0.1.Drought Order. However, due to the exceptionally dry spring experienced across southern England in 2025, flows in the River Test are currently falling towards the HoF and therefore SWS is preparing the application for the Stage 0.1 Drought Order in the expectation that, without significant rainfall in the near term, the Drought Order will need to be implemented.

1.3.8. The proposed end date would be six months after the date that the order starts, or a date mutually agreed with the EA when the threat to public water supply has passed.

1.4 HABITATS REGULATIONS ASSESSMENT

1.4.1. The Stage 0.1 Drought Order application is subject to the provisions of the Habitats Regulations.

1.4.2. Regulations 63 and 64 of the Habitats Regulations transpose the provisions of Articles 6(3) and 6(4) of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the 'Habitats Directive') as they relate to plans or projects in England Wales. Regulation 63 states

[4]. The flow division of the Great Test and Little Test is regulated by the agreement introduced in 1831, known as the Coleridge Award, to fairly manage the flow between the different river users and riparian owners. The agreement states that one third of the flow should pass down the Little Test and two thirds down the Great Test.

that if a plan or project is "*(a) is likely to have a significant effect on a European site*[5] *or a European offshore marine site*[6] *(either alone or in combination with other plans or projects); and (b) is not directly connected with or necessary to the management of the site*" then the competent authority must "…*make an appropriate assessment of the implications for the site in view of that site's conservation objectives*" before the giving consent or authorisation. The plan or project can only be given effect if it can be concluded (following an 'appropriate assessment') that it "…*will not adversely affect the integrity*" of a European site, unless the provisions of Regulation 64 are met.

1.4.3. This assessment process is known as '**Habitats Regulations Assessment**' (HRA). An HRA principally determines whether there will be any '**likely significant effects**' (LSE) on any European site as a result of a project's implementation (either on its own or 'in combination' with other plans or projects)[7] and, if so, whether there will be any '**adverse effects on site integrity**'[8]. Additional steps may be required depending on the outcomes of these assessment stages[9] (see also Section 2)

1.5 THIS REPORT

1.5.1. The Secretary of State for Environment, Food and Rural Affairs is responsible for making any Drought Orders and so is the competent authority for the assessment of the implications of authorisations sought in an application for a Drought Order. SWS (as the applicant) is required to provide any information that "*the competent authority may reasonably require for the purposes of the assessment or to enable it to determine whether an appropriate assessment is required*" (Regulation 63(2)) [10].

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[5] As noted, the 2019 amendment to the Habitats Regulations largely carried forward the provisions and terminology of the 2017 Regulations, and so the term 'European site' is currently retained and for all practical purposes the definition is essentially unchanged. European sites are therefore: any Special Area of Conservation (SAC) from the point at which the European Commission and the UK Government agreed the site as a 'Site of Community Importance' (SCI) (if this was before 31 Jan 2020); any classified Special Protection Area (SPA); and any candidate SAC (cSAC). However, the term is also commonly used when referring to potential SPAs (pSPAs), to which the provisions of Article 4(4) of Directive 2009/147/EC (the 'new wild birds directive') are applied; and to possible SACs (pSACs) and listed Ramsar Sites, to which the provisions of the Habitats Regulations are applied a matter of Government policy (NPPF para. 194) when considering development proposals that may affect them. "European site" is therefore used in this document in its broadest sense, as an umbrella term for all of the above designated sites. Note, it is likely that this term will be supplanted at some point in the future although an appropriate UK-wide alternative has not yet been agreed (e.g. the NPPF in England has adopted the term 'Habitats sites' to refer collectively to those sites defined by Regulation 8; the *Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019* does not offer a direct alternative to "European site" but uses the term 'National Site Network' in place of 'Natura 2000').

[6] 'European offshore marine sites' are defined by Regulation 18 of The Conservation of Offshore Marine Habitats and Species Regulations 2017; these regulations cover waters (and hence sites) over 12 nautical miles from the coast.

[7] Also referred to as 'screening' or the 'test of significance'.

[8] Also referred to as the 'integrity test'.

[9] i.e. those related to the provisions of Regulation 64: an 'assessment of alternative solutions' and consideration of whether the proposal should be permitted for 'imperative reasons of overriding public interest' (IROPI).

[10] Note, SWS is also a competent authority under the Regulations because it is a statutory undertaker deciding to undertake a plan or project (i.e. relaxation of HoF). Although by Regulation 63(1) it would be required to make an appropriate assessment of the implications of that project, that provision is to be read subject to

1.5.2. This report is intended to provide the data and assessment information required for the 'screening' and 'appropriate assessment' of the Stage 0.1 Drought Order application, which can be referred to by the competent authorities and the statutory consultees when assessing the proposals against Regulations 63 and 64. It includes:

- details of the proposed licensing and identification of those environmental changes that could potentially affect European sites or interest features[11];
- details of the European sites considered at the screening stage, including information on the Conservation Objectives and the interest feature characteristics, distribution and sensitivities;
- an 'appropriate assessment' of the effects of the Stage 0.1 Drought Order on those European sites and interest features that are vulnerable (i.e. both exposed and sensitive) to the effects of the Stage 0.1 Drought Order, alone and in combination with other plans and projects;
- an assessment of alternative solutions to the Stage 0.1 Drought Order;
- an assessment of overriding public interest for the Stage 0.1 Drought Order; and
- provision of compensation.

1.5.3. This report to inform an assessment under Regulations 63 and 64 of the Conservation of Habitats and Species Regulations 2017 builds upon earlier drafts that have previously been sent to the EA and NE for feedback (see below).

1.6 CONSULTATION ON THE HRA

1.6.1. Consultation with the EA and NE has been an on-going process since 2018 and development of the HRA for a Test Drought Permit/Order has been iterative since then.

1.6.2. A mock-permit exercise was conducted by SWS, the EA and NE, between September and December 2018 and a real application was made and granted in the summer of 2019. A draft application was also submitted in 2020 but, did not need to progress. Lessons learnt activities continued with the EA following each of these occurrences. Updates of supporting documents - including the HRA - occurred during 2019 and 2020, with consultation with the EA and NE. There is also a statutory process in respect of periodic renewal of water company drought plans, within which 'plan level' HRA is included by SWS for its drought plan and reviewed by the EA and NE.

1.6.3. Of specific relevance to this HRA, consultation with the EA and NE has been undertaken on a number of occasions since 2022 with advice received on the potential effect pathways specifically for the Atlantic salmon population of the River Itchen SAC and baseline data on the population. A meeting was held with EA and NE on 6 September 2022, where these matters were discussed in further detail. A revised HRA was submitted to the EA and NE for consultation on 16th September 2022 and a further revised HRA was submitted for consultation on 6th December 2022. A meeting was then held with the EA on the 25th September 2023 to specifically discuss the salmon risk status

Regulation 67(2) where there are two or more competent authorities (see Regulation 67(1)(c)). In this instance, it is considered that the implications of the plan or project would be more appropriately assessed by the Secretary of State.

[11] The European site interest features are the qualifying features for which the site is classified under the Habitats Directive (EC Directive 92/43/EEC), the Birds Directive (EC Directive 2009/147/EC) or the Ramsar convention; and the 'typical species' (for SACs) or within-site supporting habitats; note that features not associated with the site itself (e.g. non-designated habitats outside the site boundary) may also be important for the integrity of the site but may not be interest features of the site.

and reassessment of potential impacts upon salmon. On the 10th November 2023 SWS issued a Monitoring and Mitigation Plan, to the EA, providing a high-level update on the progress of the environmental monitoring, mitigation and compensation commitments under the Section 20 agreement and more detailed update of the additional environmental monitoring, assessment and mitigation commitments included with the 2022 River Test Drought Permit HRA. Throughout this period, the EA and NE reviewed and provided feedback on these iterations and consistently maintained that SWS's case was unacceptable. Subsequently, on 23rd May 2024, the EA issued a Position Statement to SWS, which challenged the proposed mitigation measures set out in the HRA, as still not being sufficient to address the risks to salmon (principally) and further feedback was provided on an updated draft HRA submitted in July 2024. Following this feedback, from mid-2024 the three parties came together to resolve differences in approach and interpretation of available data and agreed a collaborative way forwards that has informed this 2025 HRA.

1.6.4. Since mid-2024, as detailed in paragraph 1.2.4, SWS has been working on an enhanced list of mitigation and compensation measures that will be implemented to further reduce and / or offset the potential effects of drought permits/orders that may be needed on both the Itchen and the Test. Two River Test Drought Permit specific meetings were held on the 7th May and 10th June 2025 with the EA and NE to discuss these measures, and agree the position with respect to potential for effects of the Drought Order and the available mitigation and compensation.

2 APPROACH TO HRA

2.1 OVERVIEW

2.1.1. European Commission guidance[12] and established case-practice suggests a four-stage process for addressing Articles 6(3) and 6(4), and hence Regulations 63 and 64 (Box 1)[13], although not all stages will necessarily be required:

Box 1 – Stages of HRA

Stage 1 – Screening or 'Test of significance'

This stage identifies the likely effects of a project or plan on a European site, either alone or 'in combination' with other projects or plans, and considers whether these effects are likely to be significant. A plan or project should be considered 'likely' to have an effect if the competent authority is unable (on the basis of objective information) to exclude the possibility that the plan or project could have significant effects on any European site, either alone or in combination with other plans or projects; an effect will be 'significant' simply if it could undermine the site's conservation objectives. The 'screening' test or 'test of significance' is a low bar, intended as a trigger rather than a threshold test: the test is characterised as '*should we bother to check?*' in case-law. Note that mitigation measures should not be taken into account at the 'screening' stage, in accordance with the People over Wind (Court of Justice of the European Union (ECJ) Case C-323/17); this reinforces the 'low bar' nature of screening and makes 'appropriate assessments' more common than historically.

Stage 2 – Appropriate Assessment (including the 'integrity test')

An 'appropriate assessment' (if required) involves a closer examination of the plan or project where the effects on relevant European sites are significant or uncertain, to determine whether any sites will be subject to 'adverse effects on integrity' if the plan or project is given effect. The 'integrity' of a site is defined as "*the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was designated*". The scope of any 'appropriate assessment' stage is not set, and the assessments will not be extremely detailed in every case (particularly if mitigation is clearly available, achievable, and likely to be effective). The assessments must be 'appropriate' to the effects and proposal being considered, and sufficient to ensure that there is no reasonable doubt that adverse effects on site integrity will not occur (or sufficient for those effects to be appropriately quantified should Stages 3 and 4 be required).

Stage 3 – Assessment of Alternative Solutions

Where adverse effects remain after the inclusion of mitigation, Stage 3 examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of European sites. A plan or project that has adverse effects on the integrity of a European site cannot be permitted if alternative solutions are available, except for imperative reasons of overriding public interest (IROPI; see Stage 4).

Stage 4 – Assessment Where No Alternative Solutions Exist and Where Adverse Impacts Remain

This stage assesses compensatory measures where it is deemed that there are no alternatives that have no or lesser adverse effects on European sites, and the project or plan should proceed for imperative reasons of overriding public interest (IROPI). The EC guidance does not deal with the assessment of IROPI, although the IROPI need to be sufficient to override the adverse effects on European site integrity, taking into account the compensatory measures that can be secured (which must ensure the overall coherence of the 'national site network'.

2.2 ASSESSMENT

2.2.1. The approach to HRA used in this study is detailed in **Appendix A**.

2.3 UNCERTAINTIES AND LIMITATIONS

2.3.1. Information provided by third parties, including publicly available information and databases, is considered correct at the time of publication.

2.3.2. The HRA has been undertaken using best available evidence. Any uncertainties and the limitations of the assessment process are acknowledged and highlighted and where possible any uncertainty has been managed. Recommendations for avoidance and mitigation measures are also based on the information available at the time of the assessment.

2.3.3. A number of data sources were accessed to assess designated sites and the current conditions and known distributions of qualifying features. These included MAGIC (Multi-Agency Geographic Information for the Countryside), Hampshire Biological Information Centre (HBIC), Hampshire Bird Reports[14] and the Solent Waders and Brent Goose Strategy and a number of sources that informed the baseline and analysis presented in the 'Technical note on the effects of the Test drought permit on salmon in the River Itchen' (APEM, 2025, presented in **Appendix B** of this HRA), hereafter referred to as the Salmon Technical Note.

[12] Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EC 2002).

[13] Note that established European Commission guidance and case-law on HRA remain relevant despite the UK's departure from the EU.

[14] Wetland Bird Survey (WeBS data), 2013-20.

3 PROPOSALS AND STUDY AREA

3.1 PROPOSED STAGE 0.1 DROUGHT ORDER

3.1.1. Details of the proposed Stage 0.1Drought Order are provided in paragraphs 1.3.2-1.3.5 and Table 1-2 earlier in this document and are not repeated here.

3.2 DEFINING THE ZONE OF INFLUENCE

HYDROLOGICAL CONTEXT

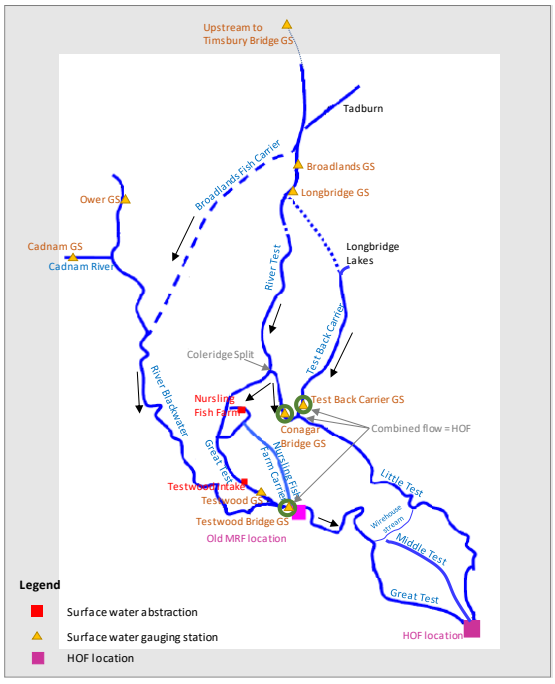
Overview

3.2.1. This section sets out the baseline hydrology of the Test, downstream of Romsey, in the vicinity of the Test Surface Water abstraction at Testwood WSW, downstream of the Testwood Bridge Gauging Station (GS) and closest to the designated sites that are within the scope of this HRA.

3.2.2. The hydrology of the River Test is complicated by the number of channels and diversions, and therefore it is important to understand the flow routings that could impact the downstream designated sites. **Figure 3-1** provides an overview of the routing downstream of Romsey.

3.2.3. Those carriers that are important to consider in relation to impacts to the designated sites are those downstream of the abstraction intake (i.e. Testwood intake on **Figure 3-1**), namely the Great Test, Little Test and Wirehouse Streams.

Figure 3-1 Hydrology schematic of the Test downstream of Romsey[15]



[15] Adapted from Environment Agency, 2011 \20151566 SWS MWH\20161205 SWS Drought Plan\7 WIP\8_Revisions\EARs\Hampshire maps.pptx

Great and Little Test split

3.2.4. This is the main split of the River Test into the Great Test and Little Test. The flow division is regulated by the agreement introduced in 1831, known as the Coleridge Award, to fairly manage the flow between the different river users and riparian owners. The agreement states that one third of the flow should pass down the Little Test and two thirds down the Great Test. However, flow data indicate that, historically, there has been significantly more than two thirds of the flow passing down the Great Test in normal to high flow periods. Under low flow conditions, less than two thirds of flow typically pass down the Great Test. The Little Test re-joins the Great Test just above the Test estuary. The Great Test – Little Test flow split is now controlled by Little River Management, who operate the fishery.

Wirehouse Streams

3.2.5. The Wirehouse Streams are fed from an offtake from the Great Test downstream of the Testwood Bridge gauging station, approximately half-way between Testwood Bridge and Testwood Mill. Flow to the stream is controlled by a sluice, which is understood to be kept locked open to provide a constant small flow to the two Wirehouse streams (there is a bifurcation a short distance from the Great Test offtake), one flowing in directly in a north-easterly direction to the Little Test (the "northern" Wirehouse Stream) and the other flowing south-east initially before flowing north-easterly to the Little Test ("southern" Wirehouse Stream).

Tidal Influence

3.2.6. The normal tidal limit ("NTL") is marked on Ordnance Survey maps near Testwood Mill / Testwood Pool. During very high tides, the NTL may be exceeded and there can be extensive inundation of the Lower Test Valley SSSI and the lower reaches of the River Test more generally.

3.2.7. The precise location of the "natural" hydraulic limit of the tide on the Great Test is uncertain due to the presence of river control structures, most notably those at Testwood Mill, but also the EA's flow gauging station immediately downstream of the abstraction. However, the fact that tidal signals are occasionally seen in the records from the gauging station suggests that in a more natural un-impounded context the hydraulic limit would extend further upstream of the Testwood abstraction.

ZONE OF INFLUENCE

Extent

3.2.8. The overall potential zone of influence considered in this assessment is shown in **Figure 3-2**, delineated to five zones (as by Moore, *et. al*. 1998[16]). The assessment also considers connectivity with designated sites in the adjacent River Itchen and coastal area.

3.2.9. The tidal zone names adopted from Moore et al (upper, middle, lower Test estuaries and Southampton Water) are useful for further description and to locationally cross–reference data and assessment issues.

[16] Moore, A., Ives, S., Mead, T.A. and Talks, L., 1998. The migratory behaviour of wild Atlantic salmon (Salmo salar L.) smolts in the River Test and Southampton Water, southern England. *Hydrobiologia*, *371*(0), pp.295-304.

3.2.10. For the purposes of this HRA, the NTL is taken to be at Testwood Mill but varies slightly between channels.

3.2.11. Downstream of Testwood Mill, the river is tidal, with the degree of tidal influence on river flows, river water level, wetted perimeter and related water quality, ecology, geomorphology and hydraulics increasing through the four tidal zones indicated on **Figure 3-2**.

3.2.12. It may also be useful for descriptive and locational cross-referencing of data and assessment issues to consider the true freshwater reach to Testwood Mill and a potentially brackish reach from Testwood Mill to the confluence with the Little Test. That is, splitting the Moore *et al*. freshwater zone into a zone 1A and 1B as indicated on **Figure 3-3**. **Figure 3-3** also cross-locates some named reference locations.

Figure 3-2 Zone of Influence (adapted from Moore *et al*., 1998)

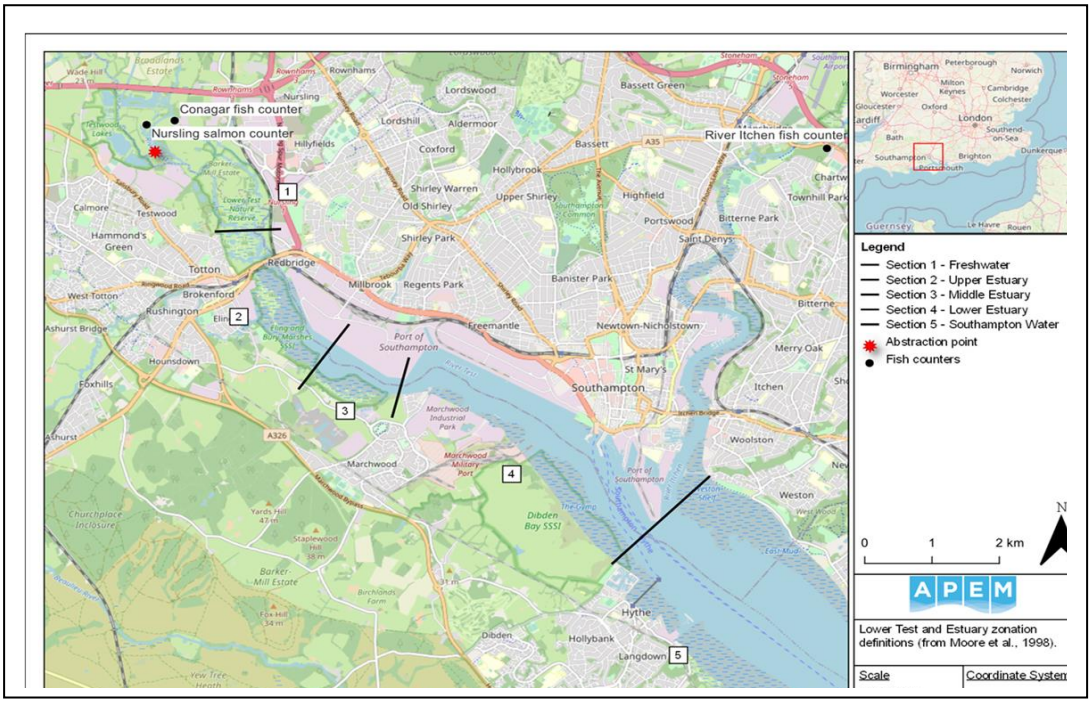
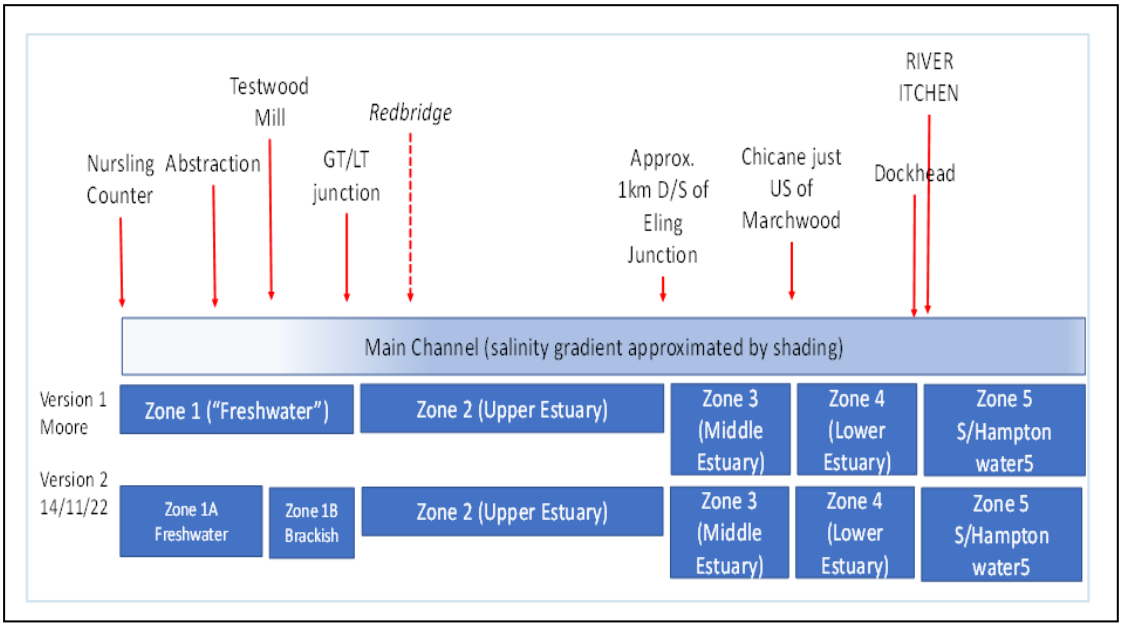


Figure 3-3 Zone of Influence, sub-division and location cross-referencing



Commentary on influence of abstraction within the Zone of Influence ("ZoI")

3.2.13. Freshwater flow inputs to the estuary are important to maintain functional requirements for estuarine features and species in the River Test estuary. Freshwater input clearly varies on a seasonal and event basis. The SWS abstraction within the River Test abstraction licence and within the Stage 0.1 Drought Order does reduce the freshwater flow downstream of it; in the Great Test and downstream, which has potential to reduce the volume of water entering the Wirehouse streams and hence also reducing flow in the Little Test downstream of the confluence, albeit in both cases by an uncertain quantity. The Middle Test is not considered to be affected.

3.2.14. The direct and proportionate impact of the abstraction upon river flows will be greatest during seasonal low flows but will decrease from upstream to downstream through the five zones (**Figure 3-2**) relative to additional tributary flows and tidal influence.

3.2.15. The greatest potential impact of abstraction upon flows can be expected in the freshwater reach of the Great Test upstream of the confluence with the River Blackwater but, also to the weirs at Testwood Mill. This reach, above the NTL, will also be where the potential direct influence of the abstraction on river water quality, hydraulics, geomorphology and ecology will be greatest. However, relationships between these factors and abstraction are not clear. The natural seasonal and diurnal variation of dissolved oxygen and /or influence of high climatic temperatures are the likely predominant factors. Downstream of the NTL the influence of the tidal cycle, consequent daily water level (and wetted perimeter) variations and tidal water influx increase markedly.

3.2.16. Any reduction of the freshwater input to the tidal zones that is due to abstraction will be proportionately greatest in the upper estuary, diminishing through the middle and lower estuary and through the main transitional water body of Southampton Water. The recombination of the Little Test and Great Test will provide a notable reduction in the proportionate influence of the abstraction. The next most significant downstream reduction of the proportionality of the abstraction will be from the confluence of the River Test and River Itchen.

3.2.17. Hydraulic modelling undertaken as part of AMP6 investigations in 2017[17][18] and reported in the EAR indicates that potentially measurable changes to physical factors such as flow volume/velocity and water level would occur only as far as Redbridge, coincident predominantly with the River Test SSSI and Lower Test Valley SSSI. However, the potential for reduced freshwater input to the estuary to affect water quality potentially may extend further along the estuary, albeit there is uncertainty in the extent and magnitude of effect.

3.2.18. The HRA needs to consider the possibility that river flow may therefore also affect saline/freshwater interactions and environmental conditions at this tidally moving boundary.

3.2.19. **Figure 3-4** shows example patterns of dissolved oxygen at Redbridge relative to River Test total flow, abstraction (already accounted for within the total Test Flow data), temperature and tidal water levels. This has demonstrated that low dissolved oxygen and high temperatures derived from the saltwater tidal influence were at levels that, depending on their duration and coincidence with holding salmon, could lead to fish mortalities, sublethal effects, migration delays or permanent displacement from the ZoI. However, SWS, to the date of this assessment is not aware of any significant reports of mortalities.

3.2.20. The estuarine zones are subject to complex hydrological, hydrographic and physico-chemical conditions that might affect salmon, through for example, reduced dilution of deoxygenated warm saline water at times of extreme high temperatures and spring tides which have been reported at Redbridge at the top of the upper estuary (Longley, 2022. EA Tech Report 28/9/2022).

3.2.21. It is uncertain what influence abstraction has within these complex relationships in the tidal reaches. In theory, lower fluvial flow could increase the risk of low dissolved oxygen and/or high river water temperature events, with abstraction lowering the fluvial flow. There is no evidence that the water quality conditions that were recorded at Redbridge during 2022 were induced or made worse by the abstraction. Data (e.g. see **Figure 3-4**) appear to show no relationship with abstraction and little variation with respect to variation in river flow once the flows are within the 2022 summer season low flow range. Also, water quality data on the lower Little Test show a similar pattern of variation to that seen at Redbridge (see **Figure 3-5**) though the SWS abstraction has no direct influence on the Little Test. This emphasises the predominant influence of the tidal cycle in these reaches during seasonal low flow periods. However, it is noted that EA commentary (dated 13th March 2023) does not align with this interpretation. As more data accumulates it should become possible to provide more detailed confirmation of this.

3.2.22. Modelling work from 2015[19] indicates that in the most extreme drought conditions, abstraction at Testwood may give rise to an increase in maximum daily temperature by the time the river reaches Testwood Mill. However, this would be short-lived (a matter of hours), unlikely to exceed 0.1°C and would be in the context of a natural diurnal variation in the order of 2°C.

3.2.23. Whilst the EA's monitoring data show that in hot, sunny weather conditions water temperatures will rise throughout the Lower Test by several degrees, with very little difference between the abstracted and non-abstracted reaches, given concerns raised by the EA in respect of the raw water

[17] Atkins. 2018. Testwood AMP6 Investigations, Hydraulic Modelling of the Lower River Test (under review)
[18] However, the EA has highlighted that due to accuracy limits of the cross-section survey data, specific local changes to flow velocity and depth at the channel margins in particular, cannot be reliably inferred from the model outputs, and there is uncertainty as to the precision of the average depth and velocity values.
[19] River Test thermal model, Atkins Technical Note, June 2015

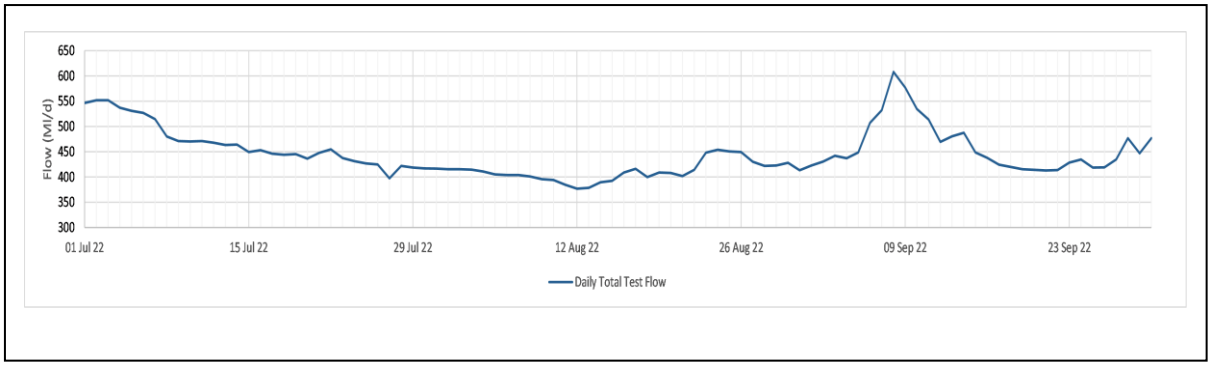
temperature data series, there remains uncertainty as to the impact of the drought order abstraction on river temperatures in the Lower Test.

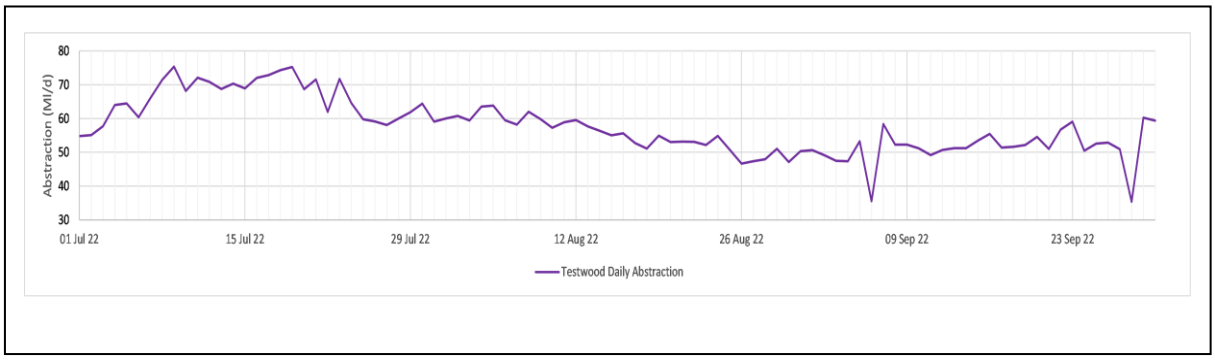
3.2.24. Overall however, the Test Surface Water Stage 0.1 Drought Order EAR predicts that there is no risk of deterioration in respect of compliance with WFD thresholds for temperature and dissolved oxygen in the Testwood Intake-NTL reach but there is a low risk of deterioration against the designated site's, River Test SSSI, water quality targets (based on Common Standards Monitoring Guidance limits) for dissolved oxygen and soluble reactive phosphorus in this reach (no temperature target is defined). The low risk in respect of dissolved oxygen is assigned because of the small margin between the dissolved oxygen levels and the SSSI target (CSMG standard), and the possibility that lower flows will lead to locally reduced dissolved oxygen levels in the reach downstream of the abstraction (and a possible increase to BOD) that will lead to a local failure of the SSSI target (CMSG standard) (as opposed to a failure at the WFD water body scale due to the length of river in the WFD water body). This risk is due to lower flows and flow velocity, along with the prevailing drought conditions where this is a greater risk of die-off of macrophytes and often hotter, sunnier conditions.

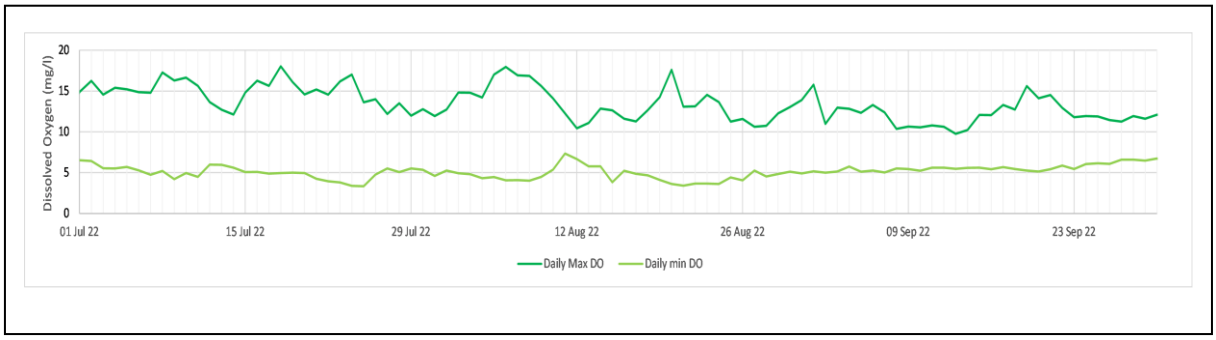
3.2.25. Downstream of the NTL, in the Test estuary, no changes are predicted in respect of compliance with WFD water quality thresholds for temperature or dissolved oxygen (EAR, Appendix B, section 4.2.5). Although this is not taken to indicate that dissolved oxygen concentrations do not fall, and water temperature does not increase, in the upper estuary during low flow and high temperature periods, the contribution of abstraction under a Stage 0.1 Drought Order remains uncertain. Potential for high temperatures and reduced dissolved oxygen to occur during drought periods in the Test in the absence of a Stage 0.1 Drought Order is detailed in Section 4.2.2 of the Salmon Technical Note in **Appendix B**.

3.2.26. To develop better understanding of these complex relationships and to help target proactive and, when necessary reactive mitigation, relative to future drought permit/order applications, SWS has undertaken high resolution bathymetric surveys of the Great Test and Little Test to support development of a hydro-dynamic and water quality model (to improve understanding of the hydrodynamic and water quality influences on the migration and in-situ health of protected salmonids under drought conditions), as well as Lidar and drone photogrammetry of the banks and floodplain. SWS is continuing to scope new monitoring sites and hydraulic modelling needs, including further bathymetric survey of Southampton Water.

Figure 3-4 Example patterns (July to September 2022) of dissolved oxygen at Redbridge relative to river flow, abstraction, temperature and tidal water level.







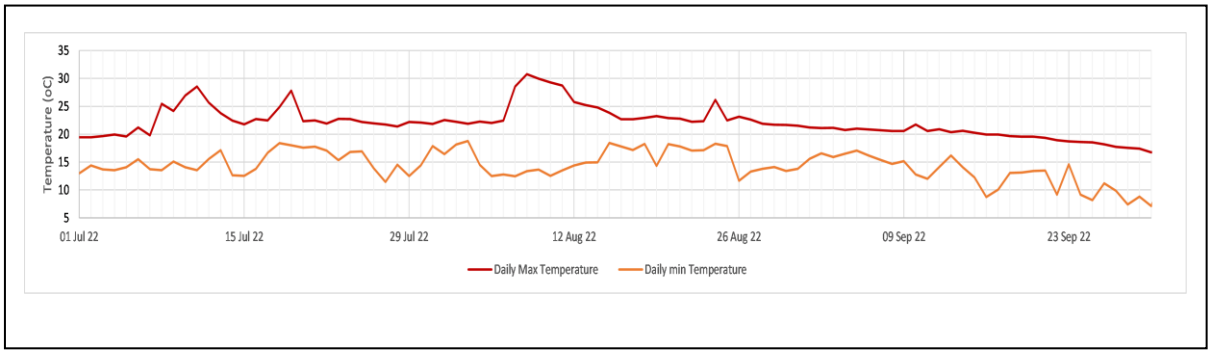
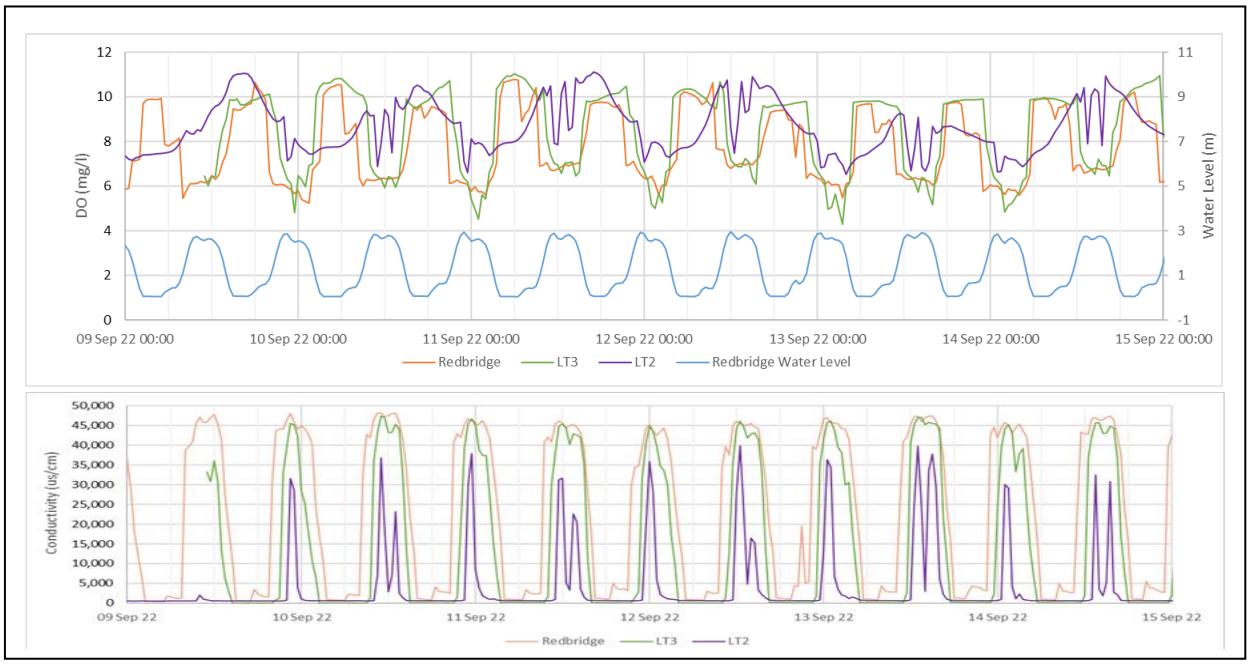


Figure 3-5 Example patterns of dissolved oxygen and Conductivity at Redbridge and in the lower Little Test (LT2 & LT3 stations) during a spring tide cycle (9th to 15th September, 2022)



3.2.27. In summary, it is predicted that changes to water level and velocity will only be experienced as far as Redbridge, however the potential for reduced flows to affect water quality (such as dissolved oxygen and temperature) likely extends further along the estuary, decreasing through zones 2-5 indicated on **Figure 3-3**, albeit without resulting in a risk to applicable water quality thresholds, and with some residual uncertainty in the assessment.

3.3 POTENTIAL MECHANISMS OF IMPACT

3.3.1. Abstraction of surface water by SWS at Testwood is on-going. However, the potential to lower flows below the current HoF under the Stage 0.1 Drought Order could theoretically affect European Sites, or their interest features, through the two following principal aspects and mechanisms:

- Damage to habitats or species from changes in hydrology; and
- Damage to habitats or species from changes in water quality.

3.4 HABITATS SITES THAT COULD BE AFFECTED

3.4.1. There is potential for the abstraction under the Stage 0.1 Drought Order to impact Habitats Sites via the mechanisms detailed above, albeit there is uncertainty and other factors may be more significant. This potential impact may extend into the tidal reaches, most likely into the upper estuary, approximately to the Eling channel/Test confluence and possibly as far as the middle estuary. The downstream boundary of the middle estuary could therefore be regarded as the lower limit of the ZoI. However, the assessment has considered all five zones as shown in **Figure 3-2**. Therefore, designated sites within the same surface water catchment are identified to ensure that any hydrological connectivity that might affect water-dependent sites, qualifying features and designated mobile species has been considered. Hence sites that are hydrologically connected and downstream of the abstractions are included. Sites that are not hydrologically linked are not included because there is no pathway for effect.

SOLENT MARITIME SAC

3.4.2. The boundary of the Solent Maritime SAC is located approximately at the confluence of the Little Test and Great Test and so, coincident with the boundary of the upper estuary as shown in **Figures 3-2 and 3-3**.

SOLENT AND SOUTHAMPTON WATER SPA AND RAMSAR

3.4.3. The upper boundary of the Solent and Southampton Water SPA and Ramsar site is located approximately 380m downstream of Testwood Bridge, within the freshwater zone as shown in **Figure 3-2** (and within the zone 1A subdivision, as indicated on **Figure 3-3**).

SOLENT AND DORSET COAST SPA

3.4.4. The Solent and Dorset Coast SPA is in direct (downstream) hydrological connectivity to Southampton Water.

RIVER ITCHEN SAC

3.4.5. The River Itchen SAC is in indirect connectivity, having its own direct flow into Southampton Water.

3.4.6. The assessment includes consideration of the potential impact of the proposed Stage 0.1 Drought Order on survival and welfare of salmon which will contribute to the future breeding of salmon in the Itchen SAC, that are considered to form a metapopulation with those of the Test and Meon. The assessment recognises that some natal River Itchen salmon may stray to the River Test and that Test-origin salmon may contribute to the Itchen salmon population.

RIVER MEON COMPENSATORY SAC HABITAT

3.4.7. The River Meon Compensatory SAC Habitat performs a compensatory function for protected features of the River Itchen SAC that will suffer adverse effects as a result of abstraction in drought conditions in respect of the Lower Itchen Drought Order.

3.4.8. Almost the whole length of the River Meon has been identified as compensatory SAC habitat. The Compensatory SAC Habitat has been identified for salmon and Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation.

3.4.9. Whilst the Meon is not hydrologically connected to the River Itchen, and nor are there any hydrological effects of the Stage 0.1 Drought Order on the Meon itself, there is a potential for effect through the same mechanism affecting the salmon population as for the Itchen SAC. Therefore it is considered appropriate to include the Meon Compensatory SAC Habitat in the Stage 1 Screening.

FUNCTIONALLY LINKED HABITAT

3.4.10. The River Test (freshwater and tidal reaches) has been considered in terms of whether it provides functional habitat for any of the qualifying features designated as part of these sites.

3.5 SITES SCREENED OUT BASED ON ABSENCE OF PATHWAY FOR EFFECT ON QUALIFYING FEATURES

RIVER TEST COMPENSATORY SAC HABITAT

3.5.1. The River Test Compensatory SAC Habitat performs a compensatory function for protected features of the River Itchen SAC that will suffer adverse effects as a result of abstraction in drought conditions in respect of the Lower Itchen Drought Order and the Candover Drought Order.

3.5.2. The compensatory SAC habitat is located in the middle reaches of the River Test (upstream of Kimbridge) and a number of tributaries and so is not directly affected by changes in flow related to the Drought Permit.

3.5.3. Furthermore the River Test Compensatory SAC Habitat has been identified as compensation for Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation (chalk stream habitat) and Southern damselfly (*Coenagrion mercuriale*), but not salmon. Therefore it is considered appropriate to screen out this site due to a lack of pathway for effect on the features for which it provides compensatory habitat.

3.6 SUMMARY

3.6.1. Seven sites have been considered in total with six of these included for consideration in the Stage 1 Screening for LSE because they are either (in part) within the ZoI or there is a potential indirect pathway of effect between the Stage 0.1 Drought Order and the qualifying interest feature of the designated site which needs to be assessed. The formally designated sites are illustrated on **Figure 3-6**, whilst the River Meon Compensatory SAC Habitat is illustrated on **Figure 3.7**.

3.6.2. The River Test Compensatory SAC Habitat is not considered further for the reasons detailed in Section 3.5 above.

Figure 3-6 Habitats Sites Scoped into the assessment

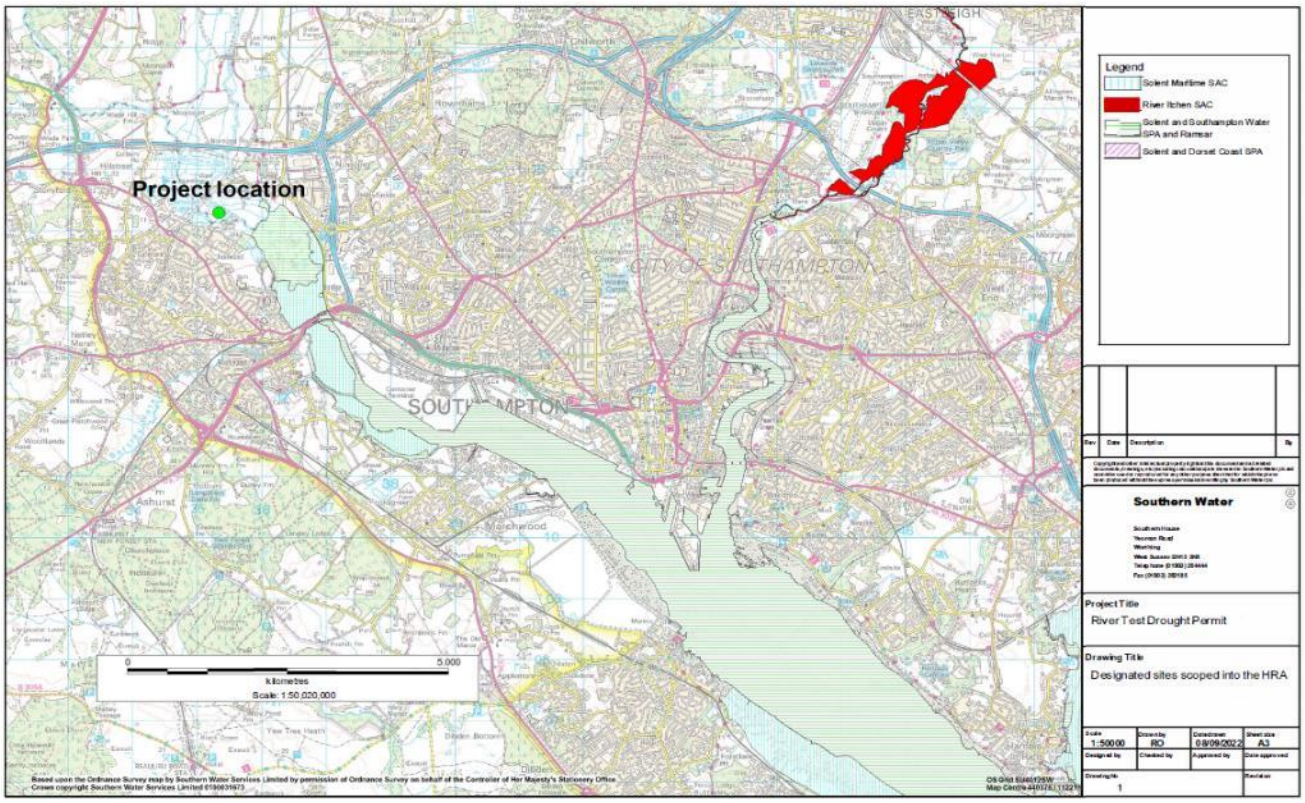


Figure 3-7 River Meon Compensatory SAC Habitat (© Natural England) Scoped into the assessment

3.7 PRINCIPAL ENVIRONMENTAL CHANGES ASSOCIATED WITH THE PROPOSED STAGE 0.1 DROUGHT ORDER

3.7.1. Based on the potential effect mechanisms detailed in **Section 3.3**, and consideration of the designated features of the European Sites scoped into this assessment detailed in **Section 3.4,** potential risks (pressures) and impact pathways, are presented in **Table 3-1,** recognising that not all will be applicable to the sites identified in this study.

Table 3-1 – Risk (pressure) and impact pathways

Risk (pressure)	Impact pathway
Flow regime	Reduction in discharge (direct reduction for surface water abstraction), velocities, wetted width, depth, additional drying in the ephemeral section.
Habitat fragmentation Barriers to migration	Reduction in quality of habitat resulting in sub-optimum or loss of habitat along the stream. Barriers to fish migration as a result of low flows over obstructions and shallow reaches and oxythermal barriers due to water quality change. Exposure of habitats due to a drop in water levels Loss of suitable habitat areas through reduction in width depth, flow Change in physical characteristics Siltation of clean gravel habitat
Habitat loss	Reduction in quality of habitat resulting in sub-optimum or loss of habitat along the stream Exposure of habitats due to a drop in water levels Loss of suitable habitat areas through reduction in width depth, flow Change in physical characteristics Siltation of clean gravel habitat Estuarine squeeze
Habitat modification	Reduction in wetted width, depth, velocities Increase in siltation Increase in filamentous algal growth as a result of reduced velocities and/or reduced water quality Change in the morphology of the channel over time due to the effect on the physical processes such as transportation and deposition of silt
Invasive species, diseases and parasites	Competitive advantage to invasive species if native species are under pressure due to suboptimal conditions as a result of lower flows.
Natural function	Disruption as a result of changes in the physical characteristics of the stream
Siltation	Increase in siltation due to a reduction in flows Smothering of clean gravel habitats
Thermal regime	Reduction in depth and velocity leading to increased water temperatures
Water quality	Reduction in flow can lead to a lack of dilution of nutrient and chemical pollutants and a reduction in dissolved oxygen levels

4 ASSESSMENT – RIVER ITCHEN SAC

4.1 SITE OVERVIEW AND CORE DESIGNATION INFORMATION

4.1.1. The River Itchen was designated as a SAC in 2005. It extends to 309.26 ha and is described in the NE (2019) *European Site Conservation Objectives, Supplementary advice on conserving and restoring site features* as typifying the classic chalk river showing a greater uniformity in physical characteristics along its entire length than other rivers of this type. The designated area also captures wetlands, particularly in the lower reaches, with NE Supplementary Advice for the River Itchen SAC (2022) indicating '*The Itchen valley contains areas of fen, swamp and meadow supporting vegetation with diverse plant communities, some typically species rich. Watercourses, including meadow ditches, base-rich runnels and flushes in open areas, small side-channels and parts of the main river support string populations of southern damselfly* Coenagrion mercuriale. *The numbers recorded place the site amongst the most important in Britain for this species.'*

4.1.2. The core information relating to the designation (i.e. qualifying features, Conservation Objectives, supplementary advice documents, information on typical species, supporting habitats and known functional land) is available online and so not replicated here in detail, to minimise repetition and over-simplification of freely available data; **Table 4-1** provides links to the key documents and information relating to the designations. Specific information that may be relevant to the assessment of effects is noted as necessary in the assessment sections below (e.g. known areas of functional land identified in the SACO documentation).

Table 4-1 – River Itchen SAC core site information

Aspect	Site data
Site Name	River Itchen SAC
Site Code	UK0012599
Qualifying features	- H3260: Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation* - S1044: Southern damselfly *Coenagrion* mercurial* - S1092: White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes** - S1096: Brook lamprey *Lampetra planeri** - S1106: Atlantic salmon *Salmo salar** - S1163: Bullhead *Cottus gobio** - S1355: Otter *Lutra lutra**
Standard Data Form	Available at: https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0012599.pdf
Conservation Objectives	Available at: http://publications.naturalengland.org.uk/publication/5130124110331904?category=6528471664689152
Site Improvement Plan	Available at: http://publications.naturalengland.org.uk/publication/5130124110331904?category=6528471664689152

Aspect	Site data
Supplementary advice	Available at: https://designatedsites.naturalengland.org.uk/TerrestrialAdvicePDFs/UK0012599.pdf
Associated SSSIs	▪ River Itchen - 2000227 SSSI
Functional land	▪ No specific areas noted, although the importance of the river corridor is noted.

4.2 SCREENING

4.2.1. The Stage 0.1 Drought Order will not alter the flows within the River Itchen itself and, therefore, there is no pathway for effect on the bullhead, white-clawed crayfish, brook lamprey, Southern damselfly and Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation qualifying features of the SAC. Whilst otters are believed to move between catchments in the Southampton Water area, including between the Test and Itchen and therefore there is a potential pathway for exposure to risk, the EA and NE advise that the Stage 0.1 Drought Order is unlikely to have a significant effect on the population and this interest feature can be screened-out.

4.2.2. However, the River Itchen salmon population has recently (in 2021-22) been classified as “at risk” rather than “probably at risk” (as was previously the case) due to a decline, since 2015, in the Itchen salmon population. Notably in 2022 only approximately 133 salmon returned to spawn, which was the lowest count in over 30 years, and in 2024, only approximately 187 returned, the third lowest ever recorded[20].

4.2.3. Additionally, through the long-recognised natural mechanism of straying, a proportion of natal River Itchen salmon may stray into the River Test. Consequently, abstraction under the Stage 0.1 Drought Order has the potential to affect these fish, hence there is a potential for effect upon the River Itchen SAC salmon population should those strays to the River Test, that would return to the River Itchen, not return successfully. Further impact could arise if Test origin fish are affected such that the source role of the Test in contributing some spawners to the Itchen is compromised.

SCREENING CONCLUSION

4.2.4. Recognising that screening is a ‘low bar’ and based on the observations above and the concern over the declining salmon population in the Itchen, the River Itchen SAC is carried through to Stage 2 Appropriate Assessment because LSE cannot be excluded (for Atlantic salmon), both alone and in-combination with other plans and projects (summarised in Table 4-2) due to the following effect pathways:

- Changes in freshwater flow potentially resulting in habitat modification/loss
- Changes in water quality.
- Changes in species distribution

[20] https://www.hiwwt.org.uk/news/urgent-action-launched-save-endangered-atlantic-salmon#:~:text=Once%20a%20thriving%20species%20in,the%20third%20lowest%20ever%20recorded.

- Presence of invasive non-native species (particularly mink).

Table 4-2 – Conclusion of the screening assessment for the River Itchen SAC

Qualifying feature	LSE (alone)?	LSE (in-combination?)
Atlantic salmon *Salmo salar*	Yes	Yes
Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation; Rivers with floating vegetation often dominated by water-crowfoot	No	No
Coenagrion mercuriale Southern damselfly	No	No
Austropotamobius pallipes White-clawed (or Atlantic stream) crayfish	No	No
Lampetra planeri Brook lamprey	No	No
Cottus gobio Bullhead	No	No
Lutra lutra Otter	No	No

4.3 APPROPRIATE ASSESSMENT

BASELINE SUMMARY

4.3.1. An overview of baseline Atlantic salmon stocks in the Rivers Test and Itchen relevant to the Stage 0.1 Drought Order is presented in the Salmon Technical Note[21] (**Appendix B**). Key points of relevance are summarised here.

4.3.2. Salmon stocks are in decline across most their range and in 2023 English and Welsh stocks were reclassified in the IUCN red list from “Least Concern” to “Endangered” as a result of a 30-50% decline in British populations since 2006 and 50-80% projected between 2010-2025.

4.3.3. Salmon catches in England and Wales have been recorded since 1951 and stocks have been assessed and reported annually since 1997, jointly by Centre for Environment, Fisheries and Aquaculture Science (Cefas), the EA in England and Natural Resources Wales for Wales. The most recent provisional assessment (for 2024) classified salmon stocks in both the Itchen and the Test as “At Risk” (of failing to meet their Management Objectives) in 2024, and projected both to be “At Risk” and “Probably at Risk” in 2027. Whilst long-term trends in salmon egg deposition in both the Itchen and the Test show increases from 1997 to 2015, the longer term change since the 1980s matches decline in salmon abundance across the North Atlantic, including in rivers in England and Wales. The Cefas/EA/NRW 2021 assessment report notes the effect of a widespread juvenile recruitment crash in 2016 (attributed to high warmer spawning temperatures in 2015 and higher flood frequencies during emergence in 2016) which is thought to have had knock-on effects in smolt output. In the cases of the Itchen and Test (having a mixture of 1SeaWinter and MultiSeaWinter

[21] APEM Ltd. June 2025. *Technical note on the effects of the Test drought permit on salmon in the River Itchen*. Author: Nigel Milner.

returners and mainly 1 year-old smolts) this means that effects on returning adults would have been expected in 2018 and 2019, other factors being equal.

4.3.4. Pressures on Itchen and Test salmon stocks specifically are numerous and include climate change-related effects through environmental pressures at sea (leading to poor smolt return rates) and in freshwater (leading to low egg and juvenile survival). In addition, multiple freshwater potential factors include flow regimes, habitat loss, diffuse pollution and sedimentation and there are potential impacts from port activities and discharges in the commercial port areas of Southampton Water. Targeted fishing is not a problem because catch and release operates, although there is a degree of inadvertent stress-related angling mortality and poaching is reported to be a problem in the lower river and upper estuary. Currently the EA assume that mortality of released rod caught salmon is 20% and the impact on RSE (running stock estimate) has been assessed as "minor"[22], however, it is considered that this underestimates the rod fishing impact because significant additional effects of stress-induced reduced spawning effectiveness of survivors have recently been shown to result from catch and release[23]. Marine illegal fishing and bycatch on other fisheries are also suspected loss factors.

POTENTIAL EFFECTS OF THE TEST SURFACE WATER STAGE 0.1 DROUGHT ORDER (ALONE)

4.3.5. An assessment of risk factors and potential effects of the Stage 0.1 Drought Order on Itchen salmon is presented in the salmon Technical Note[24] (**Appendix B**) and summarised below.

Risk factors

4.3.6. Potential for effects arise as a result of deterioration in environmental conditions in the Test ZoI, (which insofar as these might affect salmon is taken to extend from the Testwood abstraction point to the downstream end of estuary Zone 4 (Dockhead) in Southampton Water) that might result from the Stage 0.1 Drought Order allowing abstraction to continue under river flow conditions that is not allowed within the normal licensed abstraction.

4.3.7. It should be noted that low flows (often accompanied by high temperatures) resulting from the natural drought will precede or be concurrent with a Drought Permit abstraction. These are conditions that can be directly harmful to salmon and/or displace them from the system even in the absence of the Stage 0.1 Drought Order. The degree to which the Drought Permit exacerbates these conditions (magnitude and extent) and where those effects might be experienced within the ZoI remains uncertain and is subject to ongoing monitoring and modelling.

4.3.8. The rivers of the Test and Itchen support an unusual group of salmon populations that along with the other chalk catchments of Meon, Hants Avon, Stour, Piddle and Frome form a unique genetic group within which exchange of breeders and interdependencies of population resilience are likely to be higher than normal for salmon. Such a grouping is termed a metapopulation, that is they offer reciprocal support through some level of breeder exchange in the event of environmental depredation and population decline in any one. Therefore the contributions of these rivers to the Itchen should be considered in the HRA. The Test and Itchen by virtue of their proximity are

[22] Longley, D., Proof of Evidence to Public Inquiry, 2018
[23] Bouchard *et al*., 2022
[24] APEM Ltd. June 2025. *Technical note on the effects of the Test drought permit on salmon in the River Itchen*. Author: Nigel Milner.

considered the most closely reciprocally interdependent pair and the Test population being the largest by x2.2 is likely a source of breeders to the Itchen.

4.3.9. Principle environmental factors likely to act on salmon within the ZoI are high temperature, low dissolved oxygen, reduced pollutant dilution and hydraulic variables including low velocities and shallower depth. These physicochemical changes can lead to processes such as:

- Reduction in habitat size (defined by area, volume, velocities, overhead shelter and water quality), that affects holding potential and vulnerability to predation and poaching and crowding that could increase pathogen transmission.
- Reduction in flow-related cues for movements in or out of the holding areas within the ZoI and the connectivity to allow such movements.
- Exposure to lethal or sub-lethal water quality conditions, including high temperature and low dissolved oxygen, that may cause in situ stress-related physiological impacts with consequences for reproductive effectiveness.
- Barriers to river entry through avoidance of poor water quality and high temperatures leading to displacement from the ZoI and Test/Itchen system that may be permanent or lead to displacement, delays and fish missing physiological windows for maturation, or limits distribution of spawners.

4.3.10. In many cases these processes will act in synergy causing combined effects. Their occurrence and intensity will vary greatly through the ZoI according to topography, channel form and tidal influence, with a general presumption of reducing effects moving downstream as river flow has a progressively lower influence. Furthermore, these effects on salmon holding in the ZoI are dependent on:

- The location of the salmon holding areas.
- The seasonal timing and duration of their holding period.
- The levels of impact factor where the fish are located.
- An understanding of the relationship between the factors, as modified by the Stage 0.1 Drought Order, acting separately or in combination on fish originating from the Itchen and Test.

4.3.11. The river inter-dependencies should be considered. There are various categories of straying and exchange that render fish from both rivers exposed to potential Stage 0.1 Drought Order impacts in the ZoI. Fish destined to spawn in the Itchen (probably mainly of Itchen origin but some Test fish also, see above) will stray temporarily into the ZoI. Their loss or reduced breeding capacity would affect Itchen breeding success in the spawning year of Drought Order implementation. Other fish destined to spawn in the Test (mainly of Test origin with a smaller component of straying Itchen fish) if affected by the Drought Order, and if that translated to reduced smolt production, would lead to reduced Test subsidy of breeders to the Itchen after a lag of 3-4 years (generation time).

Potential effects on salmon

4.3.12. Harm in the ZoI may arise from:

- (i) *in situ* mortality if severe conditions (principally but not exclusively high temperature and low DO, predation, poaching) coincide with salmon presence;
- (ii) cessation of migration and sublethal effects through stress-related impacts on health and reproductive biology; and
- (iii) displacement to the lower estuary or to coastal waters followed by mortality and permanent loss of spawners, or delayed return as spawners, as autumn flows increase, likely to be accompanied by sublethal effects as in (ii).

4.3.13. Such losses of salmon occur naturally at times of severe drought and hot weather in many estuaries and mortalities can be high (~ 50% annual run) and would arise without a Stage 0.1 Drought Order and depending on its timing might be coincident with or even precede a Stage 0.1 Drought Order application.

4.3.14. Stage 0.1 Drought Order impacts on ZoI environment (the physicochemical conditions that can affect salmon behaviour and survival) are not known, but provisional modelling predicts limited magnitude and extent, albeit recognised as being uncertain. Specifically it is predicted that there is no risk of deterioration in respect of compliance with WFD thresholds for temperature and dissolved oxygen in the Testwood Intake-NTL reach but there is a low risk of deterioration against Common Standards Monitoring Guidance limits for dissolved oxygen and soluble reactive phosphorus in this reach (no temperature target is defined), with no risk of deterioration against WFD thresholds in the Test estuary. However, data collected at Redbridge during warm weather conditions that prevailed in 2022 do suggest that harmful conditions (principally high temperature and low oxygen) could arise under certain conditions in some locations even in the absence of a Stage 0.1 Drought Order.

4.3.15. Therefore four critical questions arise:

1. What proportion of Itchen salmon presumptive spawners (of Itchen or Test origin) stray into the ZoI and thus may be subject to in situ effects or displacement? These fish index lost breeding success in the year of the Drought Order.
2. What proportions of the Test- and Itchen-origin returning salmon that are presumptive Test spawners are affected in the ZoI? Effects on these fish could lead to a lagged effect on Test subsidy to the Itchen in 3-4 years.
3. What are the actual exposures and responses of these salmon categories to harmful ZoI environments and, and how does that translate through population dynamics into the SAC salmon population properties of production, sustainability and resilience?
4. What is the increased degree of environmental change and thus harm and spawning loss attributable to the Drought Order, relative to natural drought conditions?

4.3.16. None of these can be quantified reliably. Salmon home very accurately to heir natal river (normally >90% homing, <10% strays), but the literature refers mostly to straying of breeders not exploratory straying which is more prevalent (although mostly corrected as fish back track to natal rivers). However, the Test and Itchen are exceptionally close genetically and their proximity suggest that both functional (leading to breeding) and exploratory straying could be higher than elsewhere. This remains unresolved but puts extra risk into the assessment.

Implications of effects on the salmon population and site integrity

4.3.17. It is important to note that the existence of a risk to achieving the Conservation Objectives of a site as a result of project-related effects does not automatically equate to an adverse effect on the integrity of the site. The risk needs to be examined to the point that no reasonable scientific doubt remains as to the absence of an adverse effect.

4.3.18. In this case, given the poor state of the Itchen SAC salmon population, i.e. recent historically low numbers of returning adult salmon, even the potential for loss of a small number of salmon, as a result of implementation of the Stage 0.1 Drought Order would be considered to represent a failure against the relevant site Conservation Objectives in respect of salmon detailed below. Additionally, environmental conditions within the channel have been described that could alter the distribution of

the species, potentially preventing them from entering the river and being lost to the spawning population entirely.

- To maintain the integrity of the site or restore it as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:
  - The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely.
  - The populations of qualifying species.
  - The distribution of qualifying species within the site.

4.3.19. Therefore, it can be concluded that, in the absence of mitigation, it is not possible to conclude that the loss of a probable small number of salmon would not be an adverse effect on integrity of the River Itchen SAC.

PROPOSED MITIGATION MEASURES

4.3.20. Mitigation measures available to SWS for a 2025 Stage 0.1 Drought Order application are discussed below.

Stage 0.1 Drought Order Habitat Improvement Measures

In channel Habitat enhancement – River Test (Testwood downstream)

4.3.21. SWS has identified five small scale channel enhancement schemes that can be put in place in 2025. These are summarised below:

- Habitat Improvements to Lower Wirehouse Stream, which will improve local conditions for the salmon population over approximately 700m of channel. The principle measure will be improvements to the heavily dredged channel, to improve its overall habitat. This will include the addition of gravel to the channel, as well as creating deflectors and berms.
- Fencing along the Little River Test to exclude large grazing animals from the river bank which will improve flow conditions (eliminate unwanted channel widening) and also minimise potential for diffuse pollution (sediment) release. The extent of this will be approximately 100m.
- There is existing bank erosion at Testwood WSW which will be repaired which will improve flow conditions (eliminate unwanted channel widening) and also minimise potential for diffuse pollution (sediment) release. The extent of this will be approximately 50m.
- Repair of two further areas of bank erosion (one also affected by ash dieback increasing erosion, whilst the other is eroding behind existing bank protection) which will improve flow conditions (eliminate unwanted channel widening) and also minimise potential for diffuse pollution (sediment) release. The extent of this will be approximately 175m combined.

In channel Habitat enhancement - Blackwater

4.3.22. SWS is actively working to enhance the channel conditions, in terms of habitat provided and also reduction in diffuse pollution (specifically targeting salmonid (Sea Trout are understood to favour the Blackwater) spawning habitat, and further aiming to improve habitat for salmonids), along an extensive reach of the River Blackwater. A focused fish habitat walkover survey covering >20km in the catchment was undertaken. The following measures are proposed or being implemented currently:

- Reduction in diffuse pollution sources with 250 potential water pollution sites identified along more than 20km of channel inspected, including 15 priority locations. To start to address this five farm action plans have already been delivered and a further five are being delivered in 2025.

Pollution reduction

4.3.23. Since the summer of 2022, SWS has assessed the pollution concerns for the Little Test from the Nursling Industrial Estate outfall and has developed and is implementing a three-phase action plan to reduce the pollution risk.

4.3.24. Phase 1 involves routine regular inspection and change-out of the booms at the outfall; CCTV survey, sampling and jetting of 3.3 km of sewers and manholes / catchpits on the Industrial Estate. Phase 2 includes full clean out of the outfall and, weir and baffle upgrades (converting from wooden to steel); detailed clean and jet for 3 pipes of the Marshalls Mercedes Yard; Dewatering support and non-storm treatment management, including by oils separation. Phase 3 will be concurrent with phase 2 and follows up on phase 1 with a more detailed further investigation, aiming to identify further control and management options. This includes a unit-by-unit inspection for hydrocarbon sources within the contributing site.

4.3.25. Effectiveness of this mitigation approach is assessed through the monitoring detailed below (recognising that this is not mitigation itself). As part of the ongoing drought and wider lower Test catchment monitoring programme, analytical sampling for hydrocarbons from select accessible outfalls and locations through the Lower Test catchment has been implemented. This is to identify wider diffuse pollution pressures, and these feeding into the development of the long term Lower Test Restoration Strategy.

4.3.26. SWS, with the permission of the Lower Test Fishery, Lower River Management (LRM), has also installed two real time water quality monitoring stations in the Little Test; one (“LT2”) immediately downstream of the outfall and another (“LT3”) a further 200m downstream. These record and transmit measurement of turbidity; dissolved oxygen; temperature; conductivity, ammonium; and water level. They provide alarm messaging when low dissolved oxygen thresholds are passed and, overall, provide much improved knowledge of events and trends and means to trigger reactive response during Stage 0.1 drought order conditions.

- It is believed the measures already implemented within the three-phase plan have reduced the risk, with further aspects of the plan to follow.
- The real time water quality monitoring in the river is in place and provides information and alarms for reactive response during drought.

River Shading

4.3.27. SWS has completed (to end 2024) tree planting for river (fish) shade along two sections of the Test, in agreement with LRM, HIWWT, EA and NE, using a mixture of native trees and shrubs typical of the local area. Two further areas will be planted by SWS in 2025, subject to LRM, HIWWT, EA and NE agreement. Additional shading will be provided in the interim until the trees reach sufficient size, via shading hung over the river or river surface floated.

- Floating shading can be deployed quickly, subject to agreements with EA and LRM. Hung shading may take a little longer to ’design’, procure and implement, notably to cover holding water downstream of the storm hatches at Testwood Mill.

- Shading reduces water temperature and so can improve dissolved oxygen conditions. It also provides lower stress locations for fish to rest in.

Stage 0.1 Drought Order Emergency Measures

Aeration

4.3.28. Aeration of river water is proposed as a reactive and temporary mitigation measure which can implemented should adverse water quality conditions (specifically significantly reduced dissolved oxygen concentrations) be identified during Stage 0.1 drought order implementation. It can be implemented subject to access and environmental permissions but during drought situations SWS will be working to heightened communication with the EA, NE, LRM and others to ensure agreed deployment.

4.3.29. To optimise such operations, aeration would likely occur during night-time periods, when dissolved oxygen levels potentially sag below predetermined thresholds. However, it is expected that all parties will endorse the implementation during daytime as well should dissolved oxygen and/or river temperature indicate stress conditions for downstream fish that the aeration operation may reduce or relieve stress on fish, notably salmonids.

4.3.30. SWS have trialled and can install specialist aeration diffuser equipment at several locations in the depleted zone, and at Testwood Bridge (within the Testwood WTW plant) and can operate it to agreement with the EA. In addition, SWS, in 2024, restored five access platforms in the Lower Test, from which aeration equipment can be deployed. Exact locations and deployment types are to be determined based on-site conditions. This option could extend to provision of equipment to the Fishery Keepers, who with training could help deploy it. Deployment locations and timing should be flexible and directed by water quality data and observations of fish or other ecological stress.

4.3.31. Aeration will mitigate physico-chemical (especially dissolved oxygen) quality and potentially temperature. The benefits are potentially 20% to 50% improvement in dissolved oxygen, depending on initial saturation level and proximity of deployment.

Fish rescue

4.3.32. Fish rescue will be undertaken in extreme conditions should it become obvious that fish are stranded and in distress in the river. Although considered unlikely to be required, as only potentially needed in very extreme conditions, this can be implemented if required.

Section 20 Mitigation

4.3.33. A mitigation package which, if implemented in full would be considered sufficient to mitigate for the effects of a Stage 0.1 Drought Order at Testwood, based on the status of the Itchen SAC features at the time, was agreed in 2018 under the Section 20 Agreement. However, this was to outline design for most measures, with future funding to implement to be confirmed. The measures included comprised:

- Measure 1: River restoration to improve chalk stream habitat in the River Test
- Measure 2: River restoration in the Test to improve conditions for the fish community.
- Measure 3: Increasing shading in the River Test downstream of the lower boundary of the Watercress & Winterbournes HLF Project - Hampshire's Chalk River Headwaters Landscape Partnership Scheme – to the boundary of the M27.

- Measure 4: Significant increase in support to the Watercress & Winterbournes Project - Hampshire's Chalk River Headwaters Landscape Partnership Scheme.
- Measure 5: Support to the Test & Itchen Catchment Partnership (TICP).

4.3.34. SWS confirms that no significant progress has been made in respect of Measures 1-3 but, in contrast, Measures 4 and 5 have demonstrated considerable success in fostering catchment-wide stakeholder engagement and facilitating broader implementation of environmental initiatives. These measures are based on the principle that upstream catchment improvements will yield downstream benefits to habitat conditions within salmon-supporting reaches. Funding for all five measures remains secured through 2030, with implementation activities ongoing.

SWS Ecological Resilience Fund

4.3.35. SWS has established an Ecological Resilience Fund (which incorporates the previous Drought Resilience Fund), to enable wider catchment stakeholders to undertake environmental improvement projects, that will provide benefit to the wider River Itchen and River Test catchments. To ensure projects provide that important benefit, a governing steering group has been established, with the EA and NE key members, where all project scopes are reviewed, before funding is approved and allocated.

Assessment of benefits of mitigation measures

4.3.36. The available mitigation measures are assessed in Table 4-3 below. This provides the following:

- Measure (name only – details already provided above);
- Nature of impact mitigated under the following categories;
  - Direct flow related impacts - which include supporting flows, enhanced provision of in channel salmonid habitat, reduced use of holding pools and facilitation of moving upstream which relates to distribution of species.
  - Indirect flow related impacts which includes improvements to water temperature and water quality.
  - Indirect flow related impacts which includes reduction of predation and disturbance
- Physical/chemical effect;
- What feature benefits and where (i.e. salmon);
- Extent of benefit (affected reach or whole river);
- Confidence in measure (i.e. confidence in the measure delivering the intended benefits on a scale of low/moderate/high); and
- Scale of benefit (a measure of how effective the measure is expected to be on a scale of low/moderate/high).

4.3.37. Only measures that are almost certain to be delivered have been included in the list. Note that Section 20 Agreement Measures 4 and 5, and the Ecological Resilience Fund, are not listed below as they do not readily lend themselves to the table format but the benefits being realised should be recognised also.

Mitigation Plan

Further detail on the routine and also emergency mitigation measures discussed above to be implemented during the Stage 0.1 Drought Order is provided in the Environmental Monitoring, Mitigation and Compensation Plan (SWS, 2025[25]) that accompanies the Drought Order application.

[25] SWS (2025). Test Surface Water Licence 11/42/18.16/54 Stage 0.1 Drought Order 2025. 2.2_Environmental Monitoring, Mitigation and Compensation Plan. July 2025.

Table 4-3 – Assessment of effectiveness of mitigation measures

Measure	Nature of impact mitigated?	Physical / chemical effect	What feature benefits?	Extent of benefit	Confidence in measure	Scale of benefit
Habitat improvement Lower Wirehouse Stream	Direct flow impacts	Enhanced provision of in channel salmonid habitat, particularly for parr. Improving resilience of population	SAC salmon	Will improve local conditions for salmon population over 700m of channel	High	Moderate
Fencing along the Little River Test	Direct flow impacts Indirect flow impacts (WQ and temp)	Improve channel conditions/reducing sediment input/expanding suitable areas of habitat for the Test salmon population, improving its overall resilience	SAC salmon	Will improve local conditions for salmon population over 100m of Little River Test channel	Moderate	Low
Repair of bank erosion at Testwood WSW	Direct flow impacts Indirect flow impacts (WQ and temp)	Improve channel conditions/reducing sediment input/expanding suitable areas of habitat for the Test salmon population, improving its overall resilience	SAC salmon	Will improve local conditions for salmon population over 50m of Great Test channel	Moderate	Low
Repair of two further areas of bank erosion	Direct flow impacts Indirect flow impacts (WQ and temp)	Improve channel conditions/reducing sediment input/expanding suitable areas of habitat for the Test salmon population, improving its overall resilience	SAC salmon	Will improve local conditions for salmon population over 175m of Great Test channel	Moderate	Low
Reduction in diffuse pollution sources	Indirect flow impacts (WQ)	Improve water quality in the River Blackwater reducing sediment input, improving overall resilience of the salmonid population	SAC salmon (and sea trout)	Chemical benefits along several km of the Blackwater channel and downstream into Great Test with improved WQ and reduced sediment inputs.	Moderate	Moderate

				Salmon population in whole river		
Reduce pollution (Nursling Industrial Estate outfall)	Indirect flow impacts (WQ)	Improve water quality in Little Test, particularly in respect of first flush following storms	SAC salmon	Chemical benefits in the Little Test d/s of the outfall and in the upper estuary (approximately 1.5km)	Moderate	Moderate
River shading	Indirect flow impacts (temperature and potentially dissolved oxygen)	Tree planting in two areas, with two more planned. However, until the trees reach sufficient size artificial shade will be implemented where required to cover holding water downstream of the storm hatches at Testwood Mill.	SAC salmon	Temperature reduction (and potentially retention of higher dissolved oxygen)	Moderate	Low
Aeration	Indirect flow impacts (WQ and temperature)	Aeration will mitigate physico-chemical (especially dissolved oxygen) quality and potentially temperature – in emergency.	SAC salmon	The benefits are potentially 20% to 50% improvement in dissolved oxygen, depending on initial saturation level and proximity of deployment. Overall local benefit	Moderate (but only an emergency measure)	Low (but only an emergency measure)
Fish rescue	Direct flow related (population distribution)	Remove distressed fish to areas with improved flow conditions (likely upstream of the abstraction) in emergency.	SAC salmon	Local to the area in which the fish are distressed	High (but only an emergency measure)	Low (but only an emergency measure)

ASSESSMENT OF RESIDUAL EFFECTS

4.3.38. Mitigation measures available to SWS for this Stage 0.1 Order are relatively limited in number and, with the exception of the Blackwater which is used more by sea trout than salmon, likely to have a local benefit only. Given the difficulty in quantifying the effects of the Stage 0.1 Drought Order on the physical environment and hence then on the salmon population, based on professional judgement and having taken advice from the EA and NE during two meetings in Spring 2025, it is not possible to conclude beyond reasonable scientific doubt that these measures are sufficiently precautionary and will fully mitigate the potential for effect on the salmon population.

Monitoring

4.3.39. The Environmental Monitoring, Mitigation and Compensation Plan (SWS, 2025[26]) that accompanies the Drought Order application details proposed pre-drought monitoring, monitoring during the Stage 0.1 Drought Order and post-drought recovery monitoring and so this report to inform an HRA only lists the monitoring types.

4.3.40. Pre-drought monitoring has comprised a suite of:

- Baseline water quality monitoring including automatic continuous monitoring and spot monitoring in the Test, pollution monitoring in the River Blackwater, a key nursery habitat for salmonids, and water quality in Southampton Water.
- Baseline fish habitat monitoring in the lower River Test;
- Aerial survey and interpretation of the habitats in the intertidal and lower reaches of the River Test;
- Baseline hydrometric monitoring (water levels);
- Lower Test barrier monitoring (to be undertaken in August 2025); and
- Testing of the effects of river aeration, a temporary emergency mitigation measure to be implemented should adverse water quality conditions be identified during a drought.

4.3.41. Monitoring during a drought will comprise a suite of:

- Continuation of the on-going baseline water quality monitoring indicated above which will be used to identify failures against river water quality thresholds and trigger action.
- Monitoring of rainfall, groundwater level, river flow, and weather which can be used to trigger mitigation actions where appropriate.
- Fish distress monitoring;
- Abstraction intake fish monitoring
- Monitoring for non-native species; and
- Monitoring of physical barriers downstream.

4.3.42. Post-drought, recovery, monitoring will be the same scope as the pre-drought monitoring.

CONCLUSION FOR THE RIVER ITCHEN SAC (ALONE)

4.3.43. As it is not possible to conclude beyond reasonable scientific doubt that these measures will fully mitigate the potential for effect on the salmon population, it is not possible to conclude there will be no adverse effect on site integrity for the River Itchen SAC without compensatory measures.

[26] SWS (2025). Test Surface Water Licence 11/42/18.16/54 Stage 0.1 Drought Order 2025. 2.2_Environmental Monitoring, Mitigation and Compensation Plan. July 2025.

5 ASSESSMENT – SOLENT AND SOUTHAMPTON WATER SPA

5.1 SITE OVERVIEW AND CORE DESIGNATION INFORMATION

5.1.1. The Solent and Southampton Water SPA was designated in 1998. It comprises a series of estuaries and adjacent coastal habitat important for breeding gulls and terms and wintering waterfowl.

5.1.2. The core information relating to the designation (i.e. qualifying features, Conservation Objectives, supplementary advice documents, information on typical species, supporting habitats and known functional land) is available online and so not replicated here in detail, to minimise repetition and over-simplification of freely available data; **Table 5-1** provides links to the key documents and information relating to the designations. Specific information that may be relevant to the assessment of effects is noted as necessary in the assessment sections below (e.g. known areas of functional land identified in the SACO documentation).

Table 5-1 – Solent and Southampton Water SPA core site information

Aspect	Site Data
Site Name	Solent and Southampton Water SPA
Site Code	UK9011061
Qualifying features	- A137w: Ringed plover *Charadrius hiaticula* - A176r: Mediterranean gull *Larus melanocephalus* - A616w: Black-tailed godwit *Limosa limosa islandica* - A195r: Little tern *Sterna albifrons* - A192r: Roseate tern *Sterna dougallii* - A675w: Dark-bellied brent goose *Branta bernicla bernicla* - A191r: Sandwich tern *Sterna sandvicensis* - A052w: Eurasian teal *Anas crecca* - A193r: Common tern *Sterna hirundo* - WATR: Waterbird assemblage
Standard Data Form	Available at: https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9011061.pdf
Conservation Objectives	Available at: http://publications.naturalengland.org.uk/publication/6567218288525312?category=6528471664689152
Site Improvement Plan	Available at: http://publications.naturalengland.org.uk/publication/6567218288525312?category=6528471664689152
Supplementary advice	Available at: Designated Sites View
Associated SSSIs	▪ Brading Marshes to St. Helen's Ledges SSSI; Eling and Bury Marshes SSSI; Hurst Castle and Lymington River Estuary SSSI; Hythe to Calshot Marshes SSSI; King's Quay Shore SSSI; Lee-on-The Solent to Itchen Estuary SSSI; Lincegrove and Hackett's Marshes SSSI; Lower Test Valley SSSI; Lymington River Reedbeds SSSI; Lymington River SSSI; Medina Estuary SSSI; Newtown Harbour SSSI; North Solent SSSI; River Test SSSI; Ryde Sands and Wootton Creek SSSI; Sowley Pond SSSI; The New Forest SSSI;

Aspect	Site Data
	Thorness Bay SSSI; Titchfield Haven SSSI; Upper Hamble Estuary and Woods SSSI; Whitecliff Bay and Bembridge Ledges SSSI; Yar Estuary SSSI
Functional land	Functional land is identified by the Solent Waders and Brent Goose Strategy 2020 (Available at: https://hiwwt.maps.arcgis.com/apps/instant/minimalist/index.html?appid=f4bbd6fe517647cba8bf0f3b8cfb7c1b

5.2 SCREENING

5.2.1. The lower section of the Great Test, which lies within the Solent and Southampton Water SPA is also within the hydrological ZoI identified as being potentially affected by the Stage 0.1 Drought Order.

5.2.2. Using information obtained during the 2012 NEP study[27], species records from the HBIC (2009-2019, within zone of influence), monthly Core Count data from the British Trust for Ornithology's (BTO) Wetland Bird Survey (WeBS) monitoring scheme, designated site citations and records from the Lower Test Valley nature reserve, it has been concluded that the following species do not make significant use of the zone of influence and therefore LSEs can be excluded: Mediterranean gull, little tern, roseate tern, Sandwich tern, dark-bellied brent goose, little grebe, cormorant, pintail, red-breasted merganser and grey plover.

5.2.3. Although this conclusion has been drawn based on limited recent records of the species using the area within the zone of influence and known habitat preferences from literature review, contextual field observations from the winter 2019/20 survey period aligned with historical data sets cited (see **Appendix C** for water bird species observed at the site at low and high tides).

5.2.4. Upstream of Redbridge, habitats are largely sub-optimal for wading birds, with limited intertidal mud habitat present, and increasing levels of riparian scrub and trees introducing truncation of bird sightlines. However more extensive areas of mudflats close to Redbridge (Sanderson, 2008[28]) provide for an increase in numbers and diversity of waterbirds, as seen in survey results presented in **Appendix C**.

5.2.5. Of the remaining species, significant numbers of lapwing (360) and black-tailed godwit have been recorded (100+), and 40 common tern were counted between 2009 and 2012. Flocks of teal are known to gather from August onwards on the saltmarsh with up to 424 birds recorded in January 2015, and black-tailed godwit arrive from July, predominantly feeding on mudflats in the lower part of the marshes. Wigeon frequently occupy the Lower Test Valley, regularly recorded in good numbers throughout the wintering period with a Core Count peak of 998 individuals in January 2016.

5.2.6. BTO low tide counts between July 2013 and June 2018 include counts of wigeon (998, January 2018), teal (424, January 2015) and lapwing (360, February 2014) at higher numbers. Numbers are

[27] SWS (October 2012) Lower River Test NEP Volume 1: Report and Volume 2: Figures.
[28] Sanderson, N. 2008. Vegetation Survey of Lower Test Marshes Reserve. Botanical Survey and Assessment

generally low/in single figures with the exception of wigeon, teal and lapwing with large aggregations during winter local to Redbridge where they were observed grazing, loafing and sheltering during bad weather. However, the data available do not provide an indication of during which months the species were recorded, or whether they were nesting/roosting or foraging in the habitats.

SCREENING CONCLUSION

5.2.7. Therefore, it is concluded that LSEs can be excluded for: Mediterranean gull, little tern, roseate tern, Sandwich tern, dark-bellied brent goose, little grebe, cormorant, pintail, red-breasted merganser and grey plover. However, there remains potential for effects on common tern and over-wintering birds that could be roosting and foraging in the area. Recognising that screening is a 'low bar' and based on the observations above, the Solent and Southampton Water SPA is carried through to Stage 2 Appropriate Assessment because LSE cannot be excluded for the features indicated in Table 5-2 below due to the following effect pathways:

- Change In depth.
- Changes in water quality and thermal regime.
- Changes in water levels.
- Changes in species distribution.

Table 5-2 – Conclusion of the screening assessment for the Solent and Southampton Water SPA

Qualifying feature	LSE (alone)?	LSE (in-combination?)
Article 4.1 Breeding: Common Tern, Mediterranean Gull	Yes (except Mediterranean gull)	Yes (except Mediterranean gull)
Article 4.1 Breeding: Little Tern, Roseate Tern and Sandwich Tern	No	No
Article 4.2 over wintering birds: Black-tailed Godwit, Dark-bellied Brent Goose, Ringed Plover and Teal	Yes (except Dark-bellied Brent Goose)	Yes (except Dark-bellied Brent Goose)
Wintering waterbird assemblage including: Gadwall *Anas strepera*, Teal *Anas crecca*, Ringed Plover *Charadrius hiaticula*, Black-tailed Godwit *Limosa limosa islandica*, Little Grebe *Tachybaptus ruficollis*, Great Crested Grebe *Podiceps cristatus*, Cormorant *Phalacrocorax carbo*, Dark-bellied Brent Goose *Branta bernicla bernicla*, Wigeon *Anas penelope*, Redshank *Tringa totanus*, Pintail *Anas acuta*, Shoveler *Anas clypeata*, Red-breasted Merganser *Mergus serrator*, Grey Plover *Pluvialis squatarola*, Lapwing *Vanellus vanellus*, Dunlin *Calidris alpina alpina*, Curlew *Numenius arquata*, Shelduck *Tadorna tadorna*	Yes (but only selected species' see text)	Yes (but only selected species' see text)

5.3 APPROPRIATE ASSESSMENT

BASELINE SUMMARY

Common Tern

5.3.1. When classified in 1998, the site supported 267 pairs, representing at least 2.2% of the breeding population in Great Britain. Since the time of designation, population trends within the site have declined. Common terns arrive from April to August to breed and nest over simple shallow scrapes on sand, shingle or within low vegetation. Common terns within the designated site forage between Hurst and Hill head within the Solent. They forage between Hurst and Hill head within the Solent, searching for more sheltered locations depending on prevailing winds, although known important foraging areas in the site include Hurst and Lymington, Brading Marshes, Cowes, and Medina estuary in the late/early season (Designated Sites View).

Black-tailed godwit

5.3.2. The Icelandic population of black-tailed godwit *L. limosa islandica* breeds mainly in Iceland, sporadically in the Faeroes, Britain and Ireland, and may have bred in northern Norway. This sub-species winters mainly in Britain, Ireland and western France, and south to Morocco (Wetlands International 1999, cited in JNCC n.d.[29]). The sub-species *islandica* is comprised of a single population, intermixing throughout the southern part of its non-breeding range with western populations of *L. l. limosa*. The main concentrations are on the muddy estuaries of the south coasts of Ireland and England, inland in the Shannon valley, on the Stour and Hamford Water in eastern England and on the Ribble and Dee in NW England (Lack 1986, cited in JNCC n.d.). Black-tailed godwits feed mostly on worms whilst the tide is out and normally roost on damp pasture, often inland. Peak numbers occur in the period from mid-August to mid-September (Lack 1986, Cited in JNCC n.d.).

Ringed Plover

5.3.3. Ringed plover are present most of the year (August – May), and prefer to roost on sandbanks, bare arable fields or in low vegetation (Joint Nature Conservation Committee (JNCC), Undated). The main roosting areas for ringed plover in the site are Southampton Water and the north-west Solent, whilst other roosting sites include Beaulieu Estuary and Newtown Harbour[30].

Teal

5.3.4. In Europe, teal breed discontinuously from Iceland, Britain, Ireland, and France eastward to Russia. In winter, the species occurs across much of Europe wherever there are suitable wetland habitats, including inland and coastal wetlands. Most non-breeding teal in the UK, as elsewhere in Europe, originate from the east and north, including Iceland, Fennoscandia, and Russia. Winter flocks also contain locally breeding birds that, within Europe, are of a more sedentary or dispersive nature.

5.3.5. Birds wintering in the UK belong to the north-west European population, the size of which is currently estimated at 400,000. The general trend in the north-west European population over the last 23 years has been one of increase, with annual growth of 2.5% over the period 1967–1993.

[29] JNCC (n.d.) Black-tailed Godwit *Limosa islandica* (non-breeding) [Online] [Accessed 15.07.2022] http://jncc.defra.gov.uk/pdf/UKSPA/UKSPA-A6-70B.pdf

[30] Frost, T. M., Austin, G. E., Calbrade, Mellan, H. J., Hearn, R. D., Stroud, D. A., Wotton, S. R. and Balmer, D. E. 2017. Waterbirds in the UK 2015/16: The Wetland Bird Survey. Thetford: BTO/RSPB/JNCC.

Recent international monitoring shows that the population increase has levelled off and numbers were generally stable between 1987–1996.

Roosting locations

5.3.6. The Supplementary Advice provides further information on key roosting locations:

- Black-tailed godwit - roost in areas with extensive stretches of bare ground or short vegetation with unrestricted views (Ward and Gates, 2009[31]). Roosting sites include Beaulieu Estuary, Yar Estuary, Newtown Estuary, with important sites being Southampton Water, North-West Solent.
- Ringed plover - roost on a number of habitats such as sandbanks, spits, beaches and islands, bare arable fields, and artificial structures, e.g. bridges (cited in NE's supplementary advice as Rowsell, 2017, pers. comm. and Hughes, 2017 pers. comm). Important sites on which ringed plover roost in the SPA include the north-west Solent, whilst other roosting sites include Beaulieu Estuary and Newtown Harbour.
- Teal - roost on the water at night in areas including Yar Estuary and Medina Estuary with important roosting sites being Southampton Water, Beaulieu Estuary, Newtown Harbour, and North-West Solent.
- Waterbird assemblage - roost throughout the Solent and Southampton Water site. The ducks and geese roost mostly on the open water, whilst many of the waders roost in other areas such as bare ground, and arable fields.

Foraging sites

5.3.7. The Supplementary Advice also provides guidance on the key foraging sites:

- Black-tailed godwit feed mostly on worms in the mudflats whilst the tide is out, but also on insects, snails, some plants, beetles, grasshoppers, and other small insects (RSPB, 2017). In Solent and Southampton Water SPA, important feeding sites for Black-tailed godwit include Beaulieu Estuary, Newtown Harbour, and North-West Solent.
- Ringed plover feed on invertebrates found on shingle shores, mudflats, saltmarshes, short grassland, and flooded fields (Joint Nature Conservation Committee (JNCC), Unk). Important feeding sites in the SPA include Southampton Water, as well as Newtown Harbour and the North-West Solent[20].
- Teal forage in areas including Beaulieu Estuary, Medina Estuary, Bembridge Harbour, and the North-West Solent, with the most important sites being Southampton Water and Newtown Harbour.
- Waterbirds feed throughout the site on the intertidal sediments, the open water, small waterbodies, and on inland fields and grazing marsh.

5.3.8. The Solent Waders and Brent Goose Strategy provides mapping of the core areas, primary and secondary support areas, and low use areas within the Solent. A specific monitoring site for the Lower Test Valley has not been included, with the core areas being further south at Eling and Dibden[3233].

[31] Ward, R. and Gates, N. 2009. Assessing the disturbance of birds by aircraft in The Wash: Part 1,St Ives, RPS
[32]https://solentwbgs.files.wordpress.com/2017/02/solent-waders-and-brent-goose-strategy.pdf. Accessed on 15.07.2022
[33] https://solentwbgs.wordpress.com/page-2/. Accessed on 15.07.2022

5.3.9. This, combined with the HBIC[34] and WeBS data[35], would suggest that the Lower Test Valley is of some importance for the waterbird assemblage, with greatest use by teal, wigeon, lapwing and black-tailed godwit, for foraging.

Site-specific data

5.3.10. Additional 'look-see' survey information was gathered in 2019/2020 during the main overwintering period for waterbirds broadly following the WeBS Core Count and Low Tide guidance. Publicly accessible areas of the Lower Test Nature Reserve were surveyed on the following dates:

- 20 November 2019;
- 9 December 2019;
- 31 January 2020;
- 28 February 2020; and
- 11 March 2020.

5.3.11. The survey area spanned Lower Test Nature Reserve, between the Test Lane level crossing (SU 3679 1498) located to the east of the River Test and the River Test fishery at Testwood Mill following the public right of way to Redbridge Causeway at the Reserve's southern extent. Good viewpoints were achieved including hides located along the boardwalk. Summary results are provided as **Appendix C**.

5.3.12. Surveys from Redbridge Causeway were only possible in December 2019 due to ongoing major bridge engineering works. The majority of the survey area was flooded in March 2020.

5.3.13. The results of the 2019/2020 counts align with the HBIC and WeBS data, with the exception of black-tailed godwit which were not recorded during these surveys.

5.3.14. No further data have been collected subsequently.

POTENTIAL EFFECTS OF THE TEST SURFACE WATER STAGE 0.1 DROUGHT ORDER (ALONE)

Article 4.1 – Common tern

5.3.15. The Supplementary Advice available on the NE website concludes that the following are the key nesting sites used by the species:

- Hurst Spit – Pitts Deep area.
- Titchfield Haven National Nature Reserve (NNR).
- North Solent NNR.
- Newtown Harbour NNR.

5.3.16. It is therefore considered very unlikely that the species nests in the Lower Test Valley area (the SSSI citation does not make reference of these species) or is therefore using the habitats for feeding.

5.3.17. There is a small potential for impact on the breeding birds resulting from a reduction in feeding resource for Article 4.1 and Article 4.2 birds. There may also be impacts from prevailing low flow /

[34] Hampshire Biological Information Centre, access through SWS's mapping portal (May 2022)
[35] Hampshire Bird Reports (2013-20).

drought conditions not associated with the Test Surface Water Stage 0.1 Drought Order. Possible effects may include:

- A reduction in foraging habitat as a result of decreased water levels.
- Increased competition as a result of decreased foraging availability.
- Habitat changes impacting invertebrate and plant communities.
- Water quality impacts disrupting ecosystems.

5.3.18. Common tern predominantly predate small marine fish, but will also eat other crustaceans, insects, marine worms, small squid, leeches, marine worms. Common tern forages mostly by flying over water, hovering, and plunging to catch prey below surface, or dips down to take items from surface of water, or pursues flying insects in the air.

5.3.19. The habitats to be affected by the Test Surface Water Stage 0.1 Drought Order are areas of saltmarsh/reedbed/grazing marsh habitat upstream of Redbridge, and the river channel itself.

5.3.20. The change in water level downstream of Testwood Mill, below the NTL, is considered to be minimal. Downstream of Testwood Mill, the Great Test is a more natural feature as it is free-flowing and not impounded. Any reduction in water levels due to the Test Surface Water Stage 0.1 Drought Order abstraction is small relative to the impact of the tidal cycle that is the predominant level control.

5.3.21. At a cross-section downstream of Testwood Mill (GTT6), the abstraction of water under the Stage 0.1 Drought Order will lead to a drop in water level at minimum depths from 1.02 m to 0.94 m in the 1:500 year extreme drought event. For comparison purposes, this depth of 0.94 m rises to 2.78 m in an average tidal peak. As a result, the drop in 0.08 m water level in the main river is small (reduction of around 8%) and of very limited duration given the daily tidal cycle. Conversely, the increase in water level from an average high tide more than compensates for any marginal loss, with the high tide raising water levels significantly. The increased complexities in the flow due to the tidal prism means that the relative effect of reduced water volumes in this reach due to the Stage 0.1 Drought Order will be expected to have a negligible impact on both geomorphological form and function.

5.3.22. Additionally limited potential for impacts to water quality (low risk of deterioration against CSMG limits for dissolved oxygen and soluble reactive phosphorus above the NTL) have been predicted, albeit there remains some uncertainty.

5.3.23. No changes to the Test Estuary WFD parameters, which is part the Southampton Water WFD waterbody, immediately downstream of the NTL, are predicted.

5.3.24. Therefore, significant changes in species composition or abundance are considered unlikely as the changes to the geomorphological form and function of the river downstream of the NTL, and the water quality, are considered to be negligible. As such, no adverse effects to the foraging opportunities for common tern on the Great Test are anticipated.

Article 4.2 – Overwintering birds and wintering waterbird assemblage

As discussed above, there will be negligible impacts to the geomorphological form and function of the reaches, and limited potential for impacts to water quality (low risk of deterioration against CSMG limits for dissolved oxygen and soluble reactive phosphorus above the NTL) such that changes to the overwintering birds of waterbird assemblage could be affected. As such, no adverse effects to the wintering bird populations are likely.

PROPOSED MITIGATION MEASURES

5.3.25. No mitigation measures are specifically required. However, Drought Permit and Drought Order Mitigation agreed under the Section 20 Agreement will improve the overall resilience of the reaches upstream of the NTL when implemented. Those measures of benefit to the common tern species are:

- Mitigation measure 2 – River restoration in the Test to improve conditions for fish community.
- Mitigation Measure 5 – Support to the Test and Itchen Catchment Partnership (TICP).

5.3.26. It is also worth noting that mitigation measures in the middle reaches of the River Test, agreed as part of the compensatory measures related to a River Itchen Drought Order under the Section 20 Agreement (and part implemented to date) will be improving water quality in the lower reaches of the River Test.

CONCLUSION FOR THE SOLENT AND SOUTHAMPTON WATER SPA (ALONE)

5.3.27. No adverse effect on site integrity can be concluded for the Solent and Southampton Water SPA.

6 ASSESSMENT - SOLENT AND SOUTHAMPTON WATER RAMSAR

6.1 SITE OVERVIEW AND CORE DESIGNATION INFORMATION

The Solent and Southampton Water Ramsar was designated in 1998. The site comprises of estuaries and adjacent coastal habitats including intertidal flats, saline lagoons, shingle beaches, saltmarsh, reedbeds, damp woodland, and grazing marsh. The diversity of habitats support internationally important numbers of wintering waterfowl, important breeding gull and tern populations and an important assemblage of rare invertebrates and plants.

6.1.1. The core information relating to the designation (i.e. qualifying features, Conservation Objectives, supplementary advice documents, information on typical species, supporting habitats and known functional land) is available online and so not replicated here in detail, to minimise repetition and over-simplification of freely available data; **Table 6-1** provides links to the key documents and information relating to the designations. Specific information that may be relevant to the assessment of effects is noted as necessary in the assessment sections below (e.g. known areas of functional land identified in the SACO documentation).

Table 6-1 – Solent and Southampton Water RAMSAR core site information

Aspect	Site Data
Site Name	Solent and Southampton Water Ramsar
Site Code	UK11063
Qualifying features	- Criterion 1 - sites containing representative, rare or unique wetland types. - Criterion 2 - supports vulnerable, endangered, or critically endangered species or threatened ecological communities. - Criterion 5 - regularly supports 20,000 or more waterbirds. - Criterion 6 - regularly supports 1% of the individuals in a population of one species/subspecies of waterbirds.
Standard Data Form	Available at: https://jncc.gov.uk/jncc-assets/RIS/UK11063.pdf
Conservation Objectives	As per associated SAC / SPA, or underpinning SSSI(s)
Site Improvement Plan	As per associated SAC / SPA, or underpinning SSSI(s)
Supplementary advice	As per associated SAC / SPA, or underpinning SSSI(s)
Associated SSSIs	▪ Brading Marshes to St. Helen's Ledges SSSI; Eling and Bury Marshes SSSI; Hurst Castle and Lymington River Estuary SSSI; Hythe to Calshot Marshes SSSI; King's Quay Shore SSSI; Lee-on-The Solent to Itchen Estuary SSSI; Lincegrove and Hackett's Marshes SSSI; Lower Test Valley SSSI; Lymington River Reedbeds SSSI; Lymington River SSSI; Medina Estuary SSSI; Newtown Harbour SSSI; North Solent SSSI; River Test SSSI; Ryde Sands and Wootton Creek SSSI; Sowley Pond SSSI; The New Forest SSSI; Thorness Bay SSSI; Titchfield Haven SSSI; Upper Hamble Estuary and Woods SSSI; Whitecliff Bay and Bembridge Ledges SSSI; Yar Estuary SSSI

Aspect	Site Data
Functional land	Functional land is identified by the Solent Waders and Brent Goose Strategy 2020 (Available at: https://hiwwt.maps.arcgis.com/apps/instant/minimalist/index.html?appid=f4bbd6fe517647cba8bf0f3b8cfb7c1b

6.2 SCREENING

6.2.1. The lower section of the Great Test, which lies within the Solent and Southampton Water Ramsar site is also within the hydrological ZoI identified as being impacted by the Stage 0.1 Drought Order.

RAMSAR CRITERION 1

6.2.2. Using priority habitat mapping (**Appendix D**) and supporting information from the Solent European Marine Site Regulation 33 Package, Solent Maritime SAC Supplementary Advice and Lower Test Valley SSSI citation, it can be concluded that the following habitats are not within, or immediately downstream of, the hydrological ZoI, and therefore LSE can be excluded for the following habitats:

- Saline lagoons (both located on the Isle of Wight, approximately 32km away).
- Shallow coastal waters (not specifically mapped, but Lower Test Estuary not listed in EMS Regulation 33 package; the closest area listed is between Titchfield and Calshot at the mouth of Southampton Water, approximately 17km downstream of the NTL).
- Rocky boulder reefs (closest area at Netley, 15km downstream of NTL) and mudflats (located 800m downstream of the NTL on the Great Test).

6.2.3. Additionally, the Lower River Test NEP (2012) [36] investigation concluded that the small areas of wet woodland in the Lower Test Valley were dominated by the influences of winter flooding and tidal inundation that occur on every tide rather than freshwater flows in the lower test that might be influenced by abstractions. It is therefore possible to screen out wet woodland also.

6.2.4. However, a reduction in freshwater input could lead to:

- changes in flow potentially resulting in habitat modification/loss;
- change in depth;
- change in velocity; and
- change in water quality and thermal regime (dissolved oxygen, temperature).

6.2.5. These changes have the potential to affect the habitats listed below and therefore LSE cannot be excluded for these:

- estuaries;
- grazing marshes;
- reedbeds;
- saltmarsh.

RAMSAR CRITERION 2

6.2.6. Of the eight BRDB plants cited, *Geranium purpureum forsteri*, *Lotus angustissimus*, *Orobanche purpurea*, *Lamprothamnium papulosum*, *Spartina maritima* and *Zostera marina* are found in habitats

[36] SWS (October 2012) Lower River Test NEP Volume 1: Report and Volume 2: Figures.

either not considered to be sensitive to changes in freshwater input, or not within the freshwater ZoI (determined by habitat requirements, NBN Atlas and BSBI distribution map searches). LSE can, therefore, be excluded for these species.

6.2.7. Two species, however, have been recorded in the North Solent: dwarf spike-rush *Eleocharis parvula* and *Ludwigia palustris*. Neither the Lower Test Valley SSSI nor the downstream Eling and Bury Marshes SSSI include these species within their site designation citations. HBIC records indicate 24 separate records of *Ludwgia palustris*, the closest record is located within Hythe to Calshot Marshes SSSI, outside the hydrological ZoI of the Stage 0.1 Drought Order. LSE can, therefore, be excluded for these species.

6.2.8. With regard to the 33 BRDB invertebrate species[37], the majority of these species are unlikely to be impacted by the Stage 0.1 Drought Order as are typically associated with fully marine habitat. There are records of three species within 5km of Testwood but not within the hydrological ZoI. These include *Cantharis fusca*, a soldier beetle that prefers grassland habitat which is not directly reliant on river flow, *Staphylinus caesareus*, a beetle not directly reliant on river flow and *Hippobosca equine* a horse fly found in the New Forest.

6.2.9. *Anisodactylus poeciloides*, *Berosus spinosus*, *Paracymus aeneus*, *Atylotus latistriatus* and *Acleris lorguiniana* could potentially be impacted by the Stage 0.1 Drought Order as these species are associated with saltmarsh. However, no SSSI citations include any of these species and there are no biological records of species presence within the ZoI.

6.2.10. Based on the available information on the existing locations and habitat preferences of the plant and invertebrate species, LSE can be excluded for these species.

RAMSAR CRITERION 5

6.2.11. The screening assessment for Solent and Southampton Water SPA (Section 5.2) applies to this Ramsar criterion (LSE cannot be excluded).

RAMSAR CRITERION 6

6.2.12. The screening assessment for the Solent and Southampton Water SPA (section 5.2) applies to this Ramsar criterion (LSE cannot be excluded).

SCREENING CONCLUSION

6.2.13. Overall therefore, with the exception of Ramsar criterion 2 (RDB plants), recognising that screening is a 'low bar' and based on the observations above, the Solent and Southampton Water RAMSAR is carried through to Stage 2 Appropriate Assessment because LSE cannot be excluded for the features indicated in Table 6-2 below due to the following effect pathways:

- changes in flow potentially resulting in habitat modification/loss;
- change in depth;

[37] *Allomelita pellucida, Gammarus insensibilis Nematostella vectensis, Arctosa fulvolineata, Aulonia albimana, Anisodactylus poeciloides, Anthonomus rufus, Baris analis, Berosus spinosus, Cantharis fusca, Drypta dentata, Leptura fulva, Meligethes bidentatus, Paracymus aeneus, Staphylinus caesareus, Aphrosylus mitis, Atylotus latistriatus, Dorycera graminum, Haematopoda grandis, Hippobosca equina, Linnaemya comta, Stratiomys longicornis, Syntormon mikii, Tetanocera freyi, Villa circumdata, Trachysphaera lobata, Paludinella littorina, Truncatellina cylindrica, Andrena alfkenella, Acleris lorquiniana, Elachista littoricola, Melissoblaptes zelleri, Platytes alpinella, Psamathrocrita argentella, Armandia cirrhosa*

- change in velocity; and
- change in water quality (dissolved oxygen, temperature).

Table 6-2 – Conclusion of the screening assessment for the Solent and Southampton Water Ramsar

Qualifying feature	LSE (alone)?	LSE (in-combination?)
Ramsar criterion 1	Yes	Yes
Ramsar criterion 2	No	No
Ramsar criterion 5	Yes	Yes
Ramsar criterion 6	Yes	Yes

6.3 APPROPRIATE ASSESSMENT

BASELINE SUMMARY

Ramsar criterion 1

The site is one of the few major sheltered channels between a substantial island and mainland in European waters, exhibiting an unusual strong double tidal flow and has long periods of slack water at high and low tide. It includes many wetland habitats characteristic of the biogeographic region: saltmarshes, estuaries, grazing marshes and reedbeds.

Ramsar criterion 5

The site supports wintering bird assemblages of international importance (51,343 waterfowl (5 year peak mean 1998/99-2002/2003)).

Ramsar criterion 6

The site regularly supports more than 1% of the individuals in a population for the following species: Ringed plover, Dark-bellied Brent Goose, Teal and Black-tailed Godwit.

POTENTIAL EFFECTS OF THE TEST SURFACE WATER STAGE 0.1 DROUGHT ORDER (ALONE)

Ramsar criterion 1

6.3.1. The saltmarsh qualifying features are covered by the Solent Maritime SAC and, therefore, an assessment of the impacts to these features are provided in section 5.3. The Ramsar assessment therefore focusses on the impacts to: grazing marshes and reedbeds.

6.3.2. Sensitive plant communities may be at risk of disturbance in prevailing drought conditions, increased abstraction may exacerbate this disturbance. Studies have shown that reducing freshwater flow below a critical level can have a detrimental effect on the diversity of macroinvertebrates communities, in certain tidal rivers.

6.3.3. Baseline survey work completed for the Testwood to Otterbourne Pipeline in 2016[38] recorded the National Vegetation Classification (NVC) habitat of the parcel of land between the Great Test and drainage ditches to the east (north of Chadney Meadow) as MG10 *Holcus lanatus – Juncus effusus* rush-pasture community. The area was locally dominated by species including reed sweetgrass *Glyceria maxima*, floating sweet-grass *Glyceria fluitans*, common spikerush *Eleocharis palustris*, slender spike-rush *Eleocharis uniglumis* and lesser pond-sedge *Carex acutiformis*.

6.3.4. The NEP study[39] detailed records of the 2008 survey completed for Hampshire & Isle of Wight Wildlife Trust, which mapped the distribution of different habitat types within the Lower Test Valley SSSI boundary. This survey report included a review of NVC surveys completed in 1996, 2003 and 2008.

6.3.5. Five main vegetation zones can be broadly identified from south to north as follows:

- SM16c saltmarsh communities in the southernmost part of the Lower Test Valley SSSI.
- Swamp habitats, specifically S4 Phragmites australis reedbed with some S6 Carex riparia, are found to the north.
- Inundation grassland, mainly MG10 flush pasture and MG11 short flood pasture.
- MG8 short fen meadow and M22 tall fen (wet) meadow is found in the northern-most part of the Lower Test Valley SSSI. These fen communities grade to S5–S7 swamp along the historic ditch/meadow features.
- North of the SSSI boundary, in the area known as Manor Farm, EA surveys have identified MG6 and MG8 (dry) fen meadow with M22 in the lower lying areas that are more frequently flooded.

6.3.6. The freshwater ZoI of the abstraction on the Lower Test Valley SSSI is limited to the western and northern areas of the Lower Test Valley Nature Reserve. Beyond the NTL at Testwood Mill, the tidal influence is the dominant factor in the habitats of concern. The Stage 0.1 Drought Order will not affect the tidal regime or elicit significant impacts on salinity gradients that could trigger measurable physical impacts in the lower Test Valley SSSI area of the Ramsar site and water quality changes are limited also such that there is only a low risk of deterioration in dissolved oxygen and soluble reactive phosphorus in the channel.

6.3.7. Investigations into the wetlands and the potential impact of the abstraction were carried out as part of the NEP investigation. Vegetation in Chadney Meadows and the field north east of Ruddy Mead (central grid ref: SU36391491), as mapped by Sanderson between 1996 and 2008 are dominated by inundation grassland. This indicates that the extent of low tide conditions on the overall hydrological regime is negligible, such that the tidal inundation frequency, not low tide freshwater water level conditions is the primary hydrological process in this part of the floodplain.

6.3.8. Any impact pathway to the two fields to the north east of Chadney Meadows is only operational at low tide; at high tide, water levels in the Middle Test and in the fields and ditches adjacent to it will vary in response to tidal fluctuations, not freshwater flows out of the Great Test. It is considered that inland vegetation, represented by the MG8 *Cynosurus cristatus – Caltha palustris* community could be impacted by drought conditions.

6.3.9. Modelling was undertaken for the NEP investigation for the naturalised, historic and fully-licensed Testwood abstraction scenarios relative to the water level requirements of MG8. Results show that

[38] SWS (Sept 2016) Testwood to Otterbourne Pipeline National Vegetation Classification Survey
[39] SWS (October 2012) Lower River Test NEP Volume 1: Report and Volume 2: Figures

the water table in the Lower Test Valley SSSI, and associated Ramsar component, is largely disconnected from adjacent watercourses, presumably due to the low prevailing conductivity of the silty clay soils.

6.3.10. Water table levels vary little due to changes in watercourse levels; the only differences between predicted water table levels in the scenarios were differences in the region of 0.01 m in late summer. At other times, water table levels for different scenarios were equivalent highlighting the dominance of precipitation, evaporation and gravel water levels in determining wetland water levels across wetland habitats.

6.3.11. Therefore, as the Stage 0.1 Drought Order is seeking to abstract over the existing arrangement, there may be potential for additional impact on the MG8 communities from the freshwater feed via the Great Test. However, considering the continued contribution of freshwater from the Little Test, the effect of the Stage 0.1 Drought Order is likely to be of very limited scale and duration (change in contribution of freshwater to habitat from one of its two sources), with the Middle Test not impacted based on hydrological modelling demonstrating that the maximum degree of impact is not sustained throughout the whole drought period (see Appendix B of the EAR), implemented over a short term timescale (6 months plus recovery time to baseline flow[40]) to a localised area of the upper estuary meadow habitat.

6.3.12. Therefore, it is concluded that there will be no measurable change to the community and hence no adverse effect on the integrity of the habitats that contribute to this criterion of the Ramsar site and the ability to meet favourable conservation status will not be impeded.

Ramsar criterion 5 and criterion 6

6.3.13. The assessment reported for the overwintering birds and wintering waterbird assemblage of the Solent and Southampton Water SPA (Section 5.3) applies to these qualifying criterion of the Ramsar site. This concluded that no adverse effect will occur to the integrity of the features that contribute to these criteria of the Ramsar site and the ability to meet the favourable conservation status will not be impeded.

PROPOSED MITIGATION MEASURES

6.3.14. No mitigation measures are required. However, Drought Permit and Drought Order Mitigation agreed under the Section 20 Agreement will improve the overall resilience of the reaches upstream of the NTL when implemented, as detailed in Section 5.3.

6.3.15. It is also worth noting that mitigation measures in the middle reaches of the River Test, agreed as part of the compensatory measures related to a River Itchen Drought Order under the Section 20 Agreement (and part implemented to date) will be improving water quality in the lower reaches of the River Test.

CONCLUSION FOR THE SOLENT AND SOUTHAMPTON WATER RAMSAR SITE (ALONE)

6.3.16. No adverse effect on site integrity can be concluded for the Solent and Southampton Water Ramsar site.

[40] Dependent on prevailing weather conditions and rainfall patterns etc.

7 ASSESSMENT - SOLENT MARITIME SAC

7.1 SITE OVERVIEW AND CORE DESIGNATION INFORMATION

7.1.1. The Solent Maritime SAC is a complex site. The Solent and its inlets are unique in Britain and Europe for their unusual tidal regime, including double tides and long periods of tidal stand at high and low tide. As a result, the Solent Maritime SAC is a unique suite of functionally linked estuaries and dynamic marine and estuarine habitats. The site has the largest number of small estuaries in the tightest cluster anywhere in Great Britain, with examples of coastal plain estuaries and bar-built estuaries.

7.1.2. The core information relating to the designation (i.e. qualifying features, Conservation Objectives, supplementary advice documents, information on typical species, supporting habitats and known functional land) is available online and so not replicated here in detail, to minimise repetition and over-simplification of freely available data; **Table 7-1** provides links to the key documents and information relating to the designations. Specific information that may be relevant to the assessment of effects is noted as necessary in the assessment sections below (e.g. known areas of functional land identified in the SACO documentation).

Table 7-1 – Solent Maritime SAC core site information

Aspect	Site Data
Site Name	Solent Maritime SAC
Site Code	UK11063
Qualifying features	- H1110: Sandbanks which are slightly covered by sea water all the time - H1130: Estuaries - H1140: Mudflats and sandflats not covered by seawater at low tide - H1150: Coastal lagoons - H1210: Annual vegetation of drift lines - H1220: Perennial vegetation of stony banks - H1310: *Salicornia* and other annuals colonizing mud and sand - H1320: *Spartina* swards (*Spartinion maritimae*) - H1330: Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) - H2120: Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes") - S1016: Desmoulin`s whorl snail *Vertigo moulinsiana*
Standard Data Form	Available at: https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0030059.pdf
Conservation Objectives	Available at: http://publications.naturalengland.org.uk/publication/5762436174970880?category=6528471664689152
Site Improvement Plan	Available at: http://publications.naturalengland.org.uk/publication/5762436174970880?category=6528471664689152
Supplementary advice	Available at: https://designatedsites.naturalengland.org.uk/ConservationAdvice.aspx?SiteCode=UK0030059&SiteName=Solent%20maritime&SiteNameDisplay=Solent%20M

Aspect	Site Data
	aritime%20SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&HasCA=1&NumMarineSeasonality=0&SiteNameDisplay=Solent%20Maritime%20SAC
Associated SSSIs	▪ Bouldnor and Hamstead Cliffs SSSI; Chichester Harbour SSSI; Eling and Bury Marshes SSSI; Hurst Castle and Lymington River Estuary SSSI; Hythe to Calshot Marshes SSSI; King's Quay Shore SSSI; Langstone Harbour SSSI; Lee-on-The Solent to Itchen Estuary SSSI; Lincegrove and Hackett's Marshes SSSI; Lower Test Valley SSSI; Medina Estuary SSSI; Newtown Harbour SSSI; North Solent SSSI; Thorness Bay SSSI; Upper Hamble Estuary and Woods SSSI; Yar Estuary SSSI.
Functional land	None noted; mobile features of the site unlikely to be substantively dependent on habitats outside the site boundary.

7.2 SCREENING

7.2.1. Using priority habitat mapping (**Appendix D**), the EMODnet seabed habitat mapping[41], the Solent European Marine Site Regulation 33 Package information (2001)[42] and the Solent Maritime SAC Supplementary Advice (March 2018)[43], the following qualifying features have been confirmed as being outside the hydrological ZoI, and absent from the upper Test Estuary immediately downstream of Testwood Mill:

- H1130 Estuaries – Southampton Water estuary is not listed as part of this feature, with only the following estuaries designated as part of the SAC, four coastal plain estuaries: Yar, Medina, King's Quay Shore, Hamble and four bar-built estuaries: Newtown Harbour, Beaulieu, Langstone Harbour and Chichester Harbour.
- H1320 Spartina swards Spartinion maritimae – small cordgrass Spartina maritima is only present at Newtown Harbour (on Isle of Wight), smooth cordgrass Spartina alterniflora only occurs at Bury Marsh Farm in Marchwood and Townsend's cordgrass Spartina townsendii is only found at Hythe Marsh. Based on the defined hydrological ZoI (section 3.2) and on the distance downstream (approximately 7km downstream of the NTL on the Great Test) and tidal regime, the habitat is considered to be, using professional judgement, at sufficient distance downstream such that there is no credible pathway for the Test Surface Water Stage 0.1 Drought Order to affect this habitat. Common cordgrass Spartina anglica, although common within the Solent, is not recorded as being present in the ZoI or downstream to Redbridge (NBN Atlas and Hampshire and Isle of Wight Biodiversity Record Centre records).
- H1110 Sandbanks which are slightly covered by sea water all the time – the closest area mapped is downstream of Redbridge, approximately 1.7km from the NTL.

[41] Accessed at https://www.emodnet-seabedhabitats.eu/access-data/launch-map-viewer/
[42] English Nature (2001) Solent European Marine Site: English Nature's advice given under Regulation 33(2) of the Conservation (Natural Habitats &c.) Regulations 1994. Accessed at http://publications.naturalengland.org.uk/publication/3194402
[43] Accessed through Natural England's Designated Sites page: https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK0030059&SiteName=Solent%20Maritime&SiteNameDisplay=Solent+Maritime+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=

- H1140 Mudflats and sandflats not covered by seawater at low tide – present downstream at the confluence of Great Test, Middle Test and Little Test. Based on the defined freshwater ZoI (section 3.2) and on the distance downstream (approximately 800m downstream of the NTL on the Great Test) and tidal regime in this location, the mudflats are considered to be at sufficient distance downstream such that there is no credible pathway for the Test Surface Water Stage 0.1 Drought Order to affect this habitat.
- H1150 Coastal lagoons – the only coastal lagoons present within the designated site are Yar Lagoon or Newtown Harbour lagoon on the Isle of Wight.
- H1210 Annual vegetation of drift lines – associated with shingle beaches and most widespread at Beaulieu, Cadland, the southern coast of Hayling Island and Thorness Bay on the Isle of Wight. Priority habitat mapping available on MAGIC and information available in the Solent Maritime SAC Supplementary Advice44 does not show this habitat occurring within Southampton Water.
- H1220 Perennial vegetation of stony banks – similar distribution to the annual vegetation of drift lines. The Solent Maritime SAC Supplementary Advice does not list this as occurring within Southampton Water.
- H1310 Salicornia and other annual colonising mud and sand - areas of Salicornia and Suaeda communities are present in Lymington and Keyhaven Marshes, the Beaulieu estuary, Chichester Harbour and Newtown Harbour, with areas also found in Hythe to Calshot Marshes, River Hamble, Langstone Harbour, River Yar, Medina Estuary and King's Quay Shore. The Solent Maritime SAC Supplementary Advice does not list this as occurring within Southampton Water.
- H2120 Shifting dunes along the shoreline with Ammophila arenaria ("white dunes") – found at East Head (Chichester Harbour) and Norton Spit. Priority habitat mapping available on MAGIC and the information available on the Solent Maritime SAC Supplementary Advice does not show this habitat occurring within Southampton Water.
- S1016 Desmoulin's snail – only present at the top of Fishbourne Channel in Chichester Harbour.

7.2.2. Although there are small areas of mud along channels at low tide, Atlantic salt meadow is the only SAC feature represented in the Lower Test Marshes component of the SAC. Vegetation surveys of the Lower Test Marshes identify this community as SM16 *Juncus gerardii* saltmarsh habitat, containing *"a significant extent in the context of the SAC as a whole"* according to the designation[45].

SCREENING CONCLUSION

7.2.3. Overall therefore recognising that screening is a 'low bar' and based on the observations above, the Solent Maritime SAC is carried through to Stage 2 Appropriate Assessment because LSE cannot be excluded for Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) as indicated in Table 7-2 below due to the following effect pathways:

- changes in flow;
- change in depth;
- change in velocity
- change in water quality and thermal regime.

[44] Solent Maritime SAC Supplementary Advice (March 2018). Accessed through Natural England's Designated Sites page: https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK0030059&SiteName=Solent%20Maritime&SiteNameDisplay=Solent+Maritime+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=

[45] SWS (2012) Lower River Test NEP Volume 1: Report and Volume 2: Figures

Table 7-2 – Conclusion of the screening assessment for the Solent Maritime SAC

Qualifying feature	LSE (alone)?	LSE (in-combination?)
Estuaries	No	No
Spartina swards (*Spartinion maritimae*)	No	No
Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Yes	Yes
Sandbanks which are slightly covered by sea water all the time	No	No
Mudflats and sandflats not covered by seawater at low tide	No	No
Coastal lagoons (Priority feature)	No	No
Annual vegetation of drift lines	No	No
Perennial vegetation of stony banks	No	No
Salicornia and other annuals colonising mud and sand	No	No
Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes')	No	No
Desmoulin's whorl snail *Vertigo moulinsiana*	No	No

7.3 APPROPRIATE ASSESSMENT

BASELINE SUMMARY

7.3.1. Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) is the only SAC features for which an LSE has been predicted.

7.3.2. Saltmarsh extent in the Solent Maritime SAC around the time of designation was 1,095 ha[4647]. Although based on an evidence source from 2014[48], NE's supplementary advice notes that the current saltmarsh extent in the Solent Maritime SAC is 990.80 ha. NE's supplementary advice for this qualifying features notes that there is evidence from survey or monitoring that shows the feature to be in unfavourable condition and/or currently impacted by anthropogenic activities.

7.3.3. The current conservation status is reported as bad and deteriorating (range: favourable, area: inadequate and deteriorating, structure and function: bad and deteriorating, future prospects: bad and deteriorating).

[46] Cope, A. P., Bradbury, S. N. and Gorczynska, M. 2008. Solent Dynamic Coast Project 2008: Channel Coastal Observatory, New Forest District Council
[47] Bray, M. and Cottle, R. 2003. Solent Coastal Habitat Management plan - Volume 1: Royal Haskoning.
[48] Environment Agency. 2014. The extent of saltmarsh in England and Wales

POTENTIAL EFFECTS OF THE TEST SURFACE WATER STAGE 0.1 DROUGHT ORDER (ALONE)

7.3.4. In terms of potential effects on vegetation structure and supporting sedimentary processes, a reduction in freshwater input could result in the following possible effects:

- Potential increase in exposure at low tide as a result of a reduction in wetted area and possible desiccation of communities.
- Shift in isohalines with a change in distribution of vegetation (e.g. upstream migration of Spartina species[49]) and sessile and benthic organisms.
- Shift in saltmarsh zones with reduction in pioneer communities as a result of smothering from finer sediments deposited as a result of low flows and velocities.
- Changes in water chemistry parameters – temperature, dissolved oxygen and dissolved and particulate matter leading to changes in water quality.
- Increase in flushing or freshwater transit time resulting in a build-up of nutrients and pollutants, with an increased risk of algal blooms.
- Increased influence of tide on circulation patterns as a result of reduced freshwater input.
- Changes in water quality affecting saltmarsh stability, by reduction of communities.

7.3.5. The key areas of saltmarsh habitat in the upper Test Estuary are located in proximity to the Middle Test channel and Little Test Channel at Yarnsey, both of which have been determined as being outside of the freshwater ZoI as described in section 3.2 and shown in **Appendix D**.

7.3.6. Along the Great Test, the first area of saltmarsh, directly adjacent to the river is located at OSGR SU3653714164, dominated by Buttonweed *Coluna coronopifloia* stands[50].

7.3.7. Larger areas of saltmarsh habitat are located between the Middle Test and Great Test, central OSGR SU3632114444, dominated by upper saltmarsh *Juncus gerardii*, Red fescue *Festuca rubra* – *Glaux maritima* sub-community (SM16c) and *Juncus gerardii* dominant sub-community (SM16b)[33], these areas are outside of the freshwater ZoI of the Stage 0.1 Drought Order.

7.3.8. These upper saltmarsh stands are associated with the creeks that flow between the Middle Test and the adjacent land which are dependent on freshwater flows from land rather than from river flows and only fill to a greater extent during high tide periods – so are relatively insensitive to river flows in low flow conditions.

7.3.9. A long term study of saltmarsh areas within Southampton Water was undertaken in 2008[51]. This study reviewed aerial imaginary of saltmarsh habitat within Southampton Water between 1946 and 1996. Between this time there was a reduction in the Eling and Bury saltmarsh areas from 44ha to 18ha, this reduction was analysed as frontal erosion caused by changes in climate exposing saltmarsh to wave erosion and a restoration of saltmarsh balance following rapid saltmarsh advance recorded from the mid-19th century. Ongoing monitoring of the saltmarsh using CASI[52] images, suggests that the main body of the marsh is not suffering from internal desiccation and the dendritic network of channels appears to be very stable.

[49] Sanderson, N. 2008. Vegetation Survey of Lower Test Marshes Reserve. Botanical Survey and Assessment
[50] Sanderson, N. 2008. Vegetation Survey of Lower Test Marshes Reserve. Botanical Survey and Assessment
[51] A Conceptual Model of Southampton Water (2008) Marine Environment Research. ABPmer, 21/05/2008, V1.0
[52] Compact Airborne Spectrographic Imager, a type of infrared imaging technique

7.3.10. In addition, the change in water level downstream of Testwood Mill is considered to be minimal. Downstream of Testwood Mill, the Great Test is a more natural feature as it is free-flowing and not impounded. Any reduction in water levels due to the Stage 0.1 Drought Order abstraction is small relative to the impact of the tidal cycle. At a cross-section downstream of Testwood Mill (GTT6), the abstraction of water under the Stage 0.1 Drought Order will lead to a drop in water level at minimum depths from 1.02 m to 0.94 m in the 1:500 year extreme drought event. For comparison purposes, this depth of 0.94 m rises to 2.78 m in an average tidal peak. As a result, the drop in 0.08 m water level in the main river is small (reduction of around 8%). However, the increase in water level from an average high tide more than compensates for any marginal loss, with the high tide raising water levels significantly. The increased complexities in the flow due to the tidal prism means that the relative effect of reduced water volumes in this reach due to the Stage 0.1 Drought Order will have a negligible impact on both geomorphological form and function.

7.3.11. The Stage 0.1 Drought Order will also not affect the tidal regime or elicit significant impacts on salinity gradients that could trigger measurable physical impacts in the lower Test Valley SSSI area of the SAC and water quality changes are limited also such that there is only a low risk of deterioration in dissolved oxygen and soluble reactive phosphorus in the channel.

7.3.12. Therefore, it is concluded that there will be no measurable change to the community and hence no adverse effect on the integrity of the habitat and the ability to meet favourable conservation status will not be impeded for the following reasons:

- Areas of saltmarsh have limited connectivity with the Great Test, being present further to the east or south and therefore supplied with freshwater by the Little Test.
- The Stage 0.1 Drought Order will have negligible impact on the Middle Test and therefore negligible impact on areas of saltmarsh associated with this water course.
- Saltmarsh is resilient to changes in salinity and short-term desiccation.
- The Stage 0.1 Drought Order will have a negligible effect on geomorphological form and function downstream of Testwood Mill; consequently, there will be negligible effects to small areas of saltmarsh/reedbed habitat upstream of confluence with Middle Test and Little Test.

PROPOSED MITIGATION MEASURES

7.3.13. No mitigation measures are required.

CONCLUSION FOR THE SOLENT MARITIME SAC (ALONE)

7.3.14. No adverse effect on site integrity can be concluded for the Solent Maritime SAC.

8 ASSESSMENT - SOLENT AND DORSET COAST SPA

8.1 SITE OVERVIEW AND CORE DESIGNATION INFORMATION

8.1.1. The Solent and Dorset Coast SPA covers most of the coastline and adjacent offshore areas from Worbarrow Bay in Dorset to Littlehampton in West Sussex. It is designated principally for the important offshore foraging areas it provides for breeding tern populations associated with adjacent SPAs (notably Poole Harbour SPA, Solent and Southampton Water SPA, Chichester and Langstone Harbours SPA and Pagham Harbour SPA), so essentially covers marine habitats that would (prior to designation) have previously been considered as 'functionally linked' to the existing SPAs.

8.1.2. The core information relating to the designation (i.e. qualifying features, Conservation Objectives, supplementary advice documents, information on typical species, supporting habitats and known functional land) is available online and so not replicated here in detail, to minimise repetition and over-simplification of freely available data; **Table 8-1** provides links to the key documents and information relating to the designations. Specific information that may be relevant to the assessment of effects is noted as necessary in the assessment sections below (e.g. known areas of functional land identified in the SACO documentation).

Table 8-1 – Solent and Dorset Coast SPA core site information

Aspect	Site Data
Site Name	Solent and Dorset Coast SPA
Site Code	UK9020330
Qualifying features	- A191r: Sandwich tern *Sterna sandvicensis* - A193r: Common tern *Sterna Hirundo* - A195r: Little tern *Sterna albifrons*
Standard Data Form	Available at: https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9020330.pdf
Conservation Objectives	Available at: http://publications.naturalengland.org.uk/publication/5294923917033472?category=6528471664689152
Site Improvement Plan	Available at: http://publications.naturalengland.org.uk/publication/5294923917033472?category=6528471664689152
Supplementary advice	Available at: https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9020330
Associated SSSIs	▪ Avon Valley (Bickton to Christchurch) SSSI; Bembridge Down SSSI; Bognor Reef SSSI; Bouldnor and Hamstead Cliffs SSSI; Bracklesham Bay SSSI; Brading Marshes to St. Helen's Ledges SSSI; Browndown SSSI; Christchurch Harbour SSSI; Colwell Bay SSSI; Compton Chine to Steephill Cove SSSI; Compton Down SSSI; Eling and Bury Marshes SSSI; Felpham SSSI; Headon Warren and West High Down SSSI; Highcliffe to Milford Cliffs SSSI; Lee-on-The Solent to Itchen Estuary SSSI; Lincegrove and Hackett's Marshes SSSI; Newtown Harbour SSSI; North Solent SSSI; Pagham Harbour SSSI; Portsmouth Harbour SSSI; Purbeck Ridge (East) SSSI; River

Aspect	Site Data
	Avon System SSSI; Selsey, East Beach SSSI; Sinah Common SSSI; South Dorset Coast SSSI; Studland & Godlingston Heaths SSSI; Studland Cliffs SSSI; Thorness Bay SSSI; Whitecliff Bay and Bembridge Ledges SSSI; Yar Estuary SSSI
Functional land	None noted.

8.2 SCREENING

8.2.1. The upper Test Estuary is within the Solent and Dorset Coast SPA, and the upstream brackish habitats could provide offsite functional habitat for the qualifying features.

8.2.2. Operation of the Stage 0.1 Drought Order is unlikely to impact breeding terns, as breeding sites are outside of the hydrological ZoI (Section 3.2).

8.2.3. Foraging is not likely to change significantly more than the prevailing low flow conditions with the Stage 0.1 Drought Order in place, given the foraging resource is likely to already be impacted by low flow conditions. The large buffering effect of marine and tidal water volumes are also likely to mask any impacts of the freshwater flows from the Test, at the point and location where terns forage within the downstream habitats.

8.2.4. The potential impact to wider offshore feeding grounds and the land-based element of the Lower Test Valley are screened in as part of the Solent and Southampton Water SPA assessment (Section 4.2) and therefore the same conclusion is drawn for this SPA.

SCREENING CONCLUSION

8.2.5. Overall therefore, recognising that screening is a ‘low bar’ and based on the observations above, the Solent and Dorset Coast SPA is carried through to Stage 2 Appropriate Assessment because LSE cannot be excluded for the features indicated in Table 8-2 below due to the following effect pathways:

- Changes in water quality.
- Changes in water levels.
- Changes in species distribution.

Table 8-2 – Conclusion of the screening assessment for the Solent and Dorset Coast SPA

Qualifying feature	LSE (alone)?	LSE (in-combination?)
Article 4.1 Breeding: Common Tern, Little Tern and Sandwich Tern	Yes	Yes

8.3 APPROPRIATE ASSESSMENT

BASELINE SUMMARY

8.3.1. The Solent and Dorset Coast SPA covers 88,980.55 ha and stretches from Worbarrow Bay in Dorset to Littlehampton in West Sussex incorporating most of the Hampshire and Isle of Wight coastline and adjacent offshore areas. The SPA overlaps and shares boundaries with many other designated sites including Solent and Southampton Water SPA. The SPA protects the surrounding waters of these sites as they are used by the terns for foraging and maintenance activities, such as bathing and preening. The SPA supports over 12% of UK's tern breeding population, specifically, 4.92% of the common tern *Sterna hirundo*, 4.01% of Sandwich tern *Sterna sandvicensis*, and 3.31% of little tern *Sternula albifrons* populations[53].

8.3.2. The SPA has its landward boundary at mean low water (MLW) where it abuts any existing SPA, where terns are already a feature. Elsewhere, the landward boundary is at mean high water (MHW) so as to afford the birds protection within the intertidal areas; for example at Portsmouth Harbour.

Common Tern

8.3.3. The target for the SPA is to maintain the size of the breeding population at level which is above 492 breeding pairs. However, since designation, numbers of common terns breeding within the Solent and Dorset Coast SPA have declined.

8.3.4. The main nesting sites of common terns are located between Hurst Point and Pitts Deep, Poole Harbour, Pagham Harbour and Chichester and Langstone Harbours and their principle foraging areas extend across these areas. Common terns use the Solent and Dorset Coast SPA for foraging during the breeding season, and will regularly travel between the SPA and the breeding sites.

Little Tern

8.3.5. The target for the SPA is to maintain the size of the breeding population at level which is above 63 breeding pairs. However, since designation, numbers of little terns breeding within the Solent and Dorset Coast SPA have declined.

8.3.6. The main nesting sites of little terns, and the use of the SPA by little terns, are the same as reported above for common tern.

Sandwich Tern

8.3.7. The target for the SPA is to maintain the size of the breeding population at level which is above 441 breeding pairs. However, since designation, numbers of Sandwich terns breeding within the Solent and Dorset Coast SPA have declined.

8.3.8. The main nesting sites of Sandwich terns are located between Hurst Point and Pitts Deep, Poole Harbour and Langstone Harbour. The use of the SPA by Sandwich terns, are the same as reported above for common tern.

[53] Natural England (NE). 2015. Departmental Brief: Solent and Dorset Coast potential Special Protection Area (pSPA).

POTENTIAL EFFECTS OF TEST SURFACE WATER STAGE 0.1 DROUGHT ORDER (ALONE)

8.3.9. The potential effects of the Scheme are as described above for the Solent and Southampton SPA Article 4.1 qualifying features (see Section 5.3).

PROPOSED MITIGATION MEASURES

8.3.10. No mitigation measures are required. However, Drought Permit and Drought Order Mitigation agreed under the Section 20 Agreement will improve the overall resilience of the reaches upstream of the NTL. Those measures of benefit to the three tern species of the SPA are:

- Mitigation measure 2 – River restoration in the Test to improve conditions for fish community.
- Mitigation Measure 5 – Support to the Test and Itchen Catchment Partnership (TICP).

8.3.11. It is also worth noting that mitigation measures in the middle reaches of the River Test, agreed as part of the compensatory measures related to a River Itchen Drought Order under the Section 20 Agreement (and part implemented to date) will be improving water quality in the lower reaches of the River Test.

CONCLUSION FOR THE SOLENT AND DORESET COAST SPA (ALONE)

8.3.12. No adverse effect on site integrity can be concluded for the Solent and Dorset Coast SPA.

9 RIVER MEON COMPENSATORY SAC HABITAT

9.1 SITE OVERVIEW AND CORE DESIGNATION INFORMATION

9.1.1. The River Meon Compensatory SAC Habitat performs a compensatory function for protected features of the River Itchen SAC that will suffer adverse effects as a result of abstraction in drought conditions in respect of the Lower Itchen Drought Order.

9.1.2. Almost the whole length of the River Meon has been identified as compensatory SAC habitat. The Compensatory SAC Habitat has been identified for salmon and Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation.

9.1.3. Paragraph 194c of Chapter 15 of the National Planning Policy Framework[54] (NPPF) states that sites identified, or required, as compensatory measures for adverse effects on habitats sites, should be given the same protection as Habitats Sites, and hence this is included as such here.

9.1.4. There is no core site information for the River Meon Compensatory SAC Habitat as there is for the River Itchen SAC, however it is assumed that the same Conservation Objectives as defined for the River Itchen SAC salmon and Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation qualifying features apply to this site.

9.2 SCREENING

9.2.1. The Stage 0.1 Drought Order will not alter the flows within the River Meon itself and, therefore, there is no pathway for effect on the Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation compensatory habitat.

9.2.2. However, the River Meon supports a small population of salmon, which has been demonstrated to be part of a metapopulation with those of the Itchen and Test, as detailed in Section 4 of this report. Therefore, as discussed in Section 4 in respect of the River Itchen salmon population, through the long-recognised natural mechanism of straying, a proportion of natal River Meon salmon may stray into the River Test, albeit considered less likely than in respect of Itchen salmon. Consequently, abstraction under the Stage 0.1 Drought Order has the potential to affect these fish and hence there is a potential for effect upon the River Meon salmon population should those strays to the River Test, that would return to the River Meon, not return successfully.

SCREENING CONCLUSION

9.2.3. Recognising that screening is a ‘low bar’ and based on the observations above, the River Meon Compensatory SAC Habitat is carried through to Stage 2 Appropriate Assessment because LSE cannot be excluded (for Atlantic salmon), both alone and in-combination with other plans and projects (summarised in Table 9-1) due to the following effect pathways:

- Changes in freshwater flow potentially resulting in habitat modification/loss
- Changes in water quality.
- Changes in species distribution
- Presence of invasive non-native species (particularly mink).

[54] Ministry of Housing, Communities & Local Government, 2025. National Planning Policy Framework.

Table 9-1 – Conclusion of the screening assessment for the River Meon Compensatory SAC Habitat

Qualifying feature	LSE (alone)?	LSE (in-combination?)
Atlantic salmon *Salmo salar*	Yes	Yes
Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation; Rivers with floating vegetation often dominated by water-crowfoot	No	No

9.3 APPROPRIATE ASSESSMENT

BASELINE SUMMARY

9.3.1. There are no count data for returning adult salmon in the Meon and therefore the size of the population is unknown but assumed to be low. For example, the Meon Valley Partnership (https://meonvalleypartnership.org.uk) has noted that "Sea trout and occasionally one or two salmon come into the river from the sea to spawn".

9.3.2. There is recognised to be a major obstacle to returning migratory fish at the mouth of the Meon, Titchfield Haven tidal sluice. However, adult salmon do enter the river. EA fisheries survey data includes 0+ and 1+ salmon from six sample sites in the last 10-15 years, with the location they are most frequently recorded from being 'Upstream of Silver Springs' which is just downstream of the M27, in the lower reaches of the river. There are very few records upstream of this point.

9.3.3. As indicated earlier, the Meon salmon population is genetically linked to the populations in the Itchen and Test, although the Itchen and Test populations are the most closely linked. Nonetheless, the Meon is considered part of the metapopulation as detailed earlier in Section 4.

POTENTIAL EFFECTS OF THE TEST SURFACE WATER STAGE 0.1 DROUGHT ORDER (ALONE)

9.3.4. The risk factors, potential for effects of the Stage 0.1 Drought Order on the Meon salmon population, implications of effects on the salmon population and site integrity are considered to be the same as detailed for the River Itchen in Section 4. This is because, despite the lack of data on the salmon population of the Meon, the metapopulation status assigned to the population leads to the same four critical questions, arising in respect of the Meon population as were highlighted in respect of the Itchen salmon population, detailed in paragraph 4.3.15.

9.3.5. Therefore, it must be concluded that, in the absence of mitigation, it is not possible to conclude that the loss of a highly uncertain, and likely very small, number of salmon would not be an adverse effect on integrity of the River Meon Compensatory SAC Habitat.

PROPOSED MITIGATION MEASURES

9.3.6. The proposed mitigation measures for the scheme as detailed in Section 4 apply equally to the River Meon Compensatory SAC Habitat. No additional mitigation measures are available in respect of this compensatory SAC habitat.

ASSESSMENT OF RESIDUAL EFFECTS

9.3.7. As detailed in Section 4, mitigation measures available to SWS for this Stage 0.1 Order are relatively limited in number and, with the exception of the Blackwater which is used more by sea trout than salmon, likely to have a local benefit only. Given the difficulty in quantifying the effects of the Stage 0.1 Drought Order on the physical environment and hence then on the salmon population, based on professional judgement and having taken advice from the EA and NE during two meetings in spring 2025, it is not possible to conclude beyond reasonable scientific doubt that these measures are sufficiently precautionary and will fully mitigate the potential for effect on the salmon population.

Monitoring

9.3.8. The monitoring detailed in the Environmental Monitoring, Mitigation and Compensation Plan (SWS, 2025[55]) that accompanies the Drought Order application, and referred to earlier in paragraphs 4.3.40-4.3.43, details proposed pre-drought monitoring, monitoring during the Stage 0.1 Drought Order and post-drought recovery monitoring. This monitoring applies equally to the River Meon Compensatory SAC Habitat. No additional monitoring is proposed in respect of this compensatory SAC habitat.

CONCLUSION FOR THE RIVER MEON COMPENSATORY SAC HABITAT (ALONE)

9.3.9. As it is not possible to conclude beyond reasonable scientific doubt that these measures will fully mitigate the potential for effect on the salmon population it is not possible to conclude there will be no adverse effect on site integrity for the River Meon Compensatory SAC Habitat, without compensatory measures.

9.3.10. However, in respect of the Meon, the uncertainties in respect of the potential effects of the Stage 0.1 Drought Order on the physical environment are compounded by the uncertainties in respect of the salmon population in the Meon, the extent to which Meon salmon may stray into the ZoI and the more distant genetic link between the Meon fish and those of the Itchen and Test, than between those of the latter two rivers. This makes the assessment conclusion highly uncertain and highly precautionary.

[55] SWS (2025). Test Surface Water Licence 11/42/18.16/54 Stage 0.1 Drought Order 2025. 2.2_Environmental Monitoring, Mitigation and Compensation Plan. July 2025.

10 IN-COMBINATION ASSESSMENT

10.1 APPROACH TO IN-COMBINATION ASSESSMENT

10.1.1. Regulation 63 of The Conservation of Habitats and Species Regulations 2017 requires the competent authority to consider any permission, plans or projects that are likely to have a significant effect on a European site, either alone or in-combination with other permissions, plans or projects (PPP). Where permissions indicate a likely significant effect, these should be assessed in-combination with each other and with other relevant plans and projects.

The potential mechanisms of effect identified in the alone assessment are:

- changes in flow;
- change in water depth;
- changes in flow velocity;
- change in water quality and thermal regime.

In-combination effects can be one of the following:

- additive - the total effect of a number of effects is equal to the sum of the individual effects
- synergistic - the effect of the interaction of a number of effects is greater than the sum of the individual effects
- neutralistic - the effects counteract each other, reducing the overall effect
- overlapping - affecting the same spatial area of a feature and/or the same attributes of the feature.
- discrete - affecting different areas and different attributes of the feature.

The assessment considers the following:

- projects that are under construction.
- permitted application(s) not yet implemented.
- submitted application(s) not yet determined.
- projects on the National Infrastructure's programme of projects.
- projects identified in the relevant development plan (and emerging development plans – with appropriate weight being given as they move closer to adoption), recognising that much information on any relevant proposals will be limited and the degree of uncertainty which may be present.

The key aspects to consider for in-combination effects are:

- the temporal and geographic boundaries of the effects of activities
- the interactions between the activities and the overall ecosystems
- the environmental effects of the project, and past and future projects and activities
- the thresholds of sensitivity of the existing environment

To be considered within the in-combination assessment other permissions, plans or projects should meet the following criteria:

- generate their own residual impacts of at least minor significance
- be likely to be constructed or operate over similar time periods
- be spatially linked to the proposed development

10.2 RELEVANT PLANS AND PROJECTS

10.2.1. To ensure that the list of PPPS to be considered for the in-combination assessment was appropriate the assessment has had regard to:

- if there is a potential pathway or mechanism for in-combination effects. If none are identified, then the PPP will not be considered; and
- whether the PPP is a construction or works project that is now complete - if so, the PPP will have already been considered as part of the prevailing environmental conditions and effectively taken into consideration in the alone assessment. As a result, it will not be considered further in the in-combination assessment to avoid double counting.

10.2.2. Identified mechanisms for in-combination effects for the proposed Test Surface Water Stage 0.1 Drought Order include:

- zones of overlap between similar effects on an interest feature arising from different PPPs (for instance overlapping effects on the Thames estuary).
- zones of overlap of different types of effect arising from different PPPs; and
- the cumulative effects of different PPPs acting in different locations on the same interest feature, leading to potential adverse effects on the interest feature in terms of the proportion of the total resource of that interest feature within the site that is affected.

10.2.3. Plans and projects having potential for effects that could act in-combination with those of the proposed Stage 0.1 Drought Order abstraction have been identified by review of the following:

- Water resource options being implemented in relation to water company Water Resource Management Plans (WRMP) for:
  - Southern Water
  - Portsmouth Water
  - South East Water
- Drought options being implemented in relation to water company Drought Plans (DP) for:
  - Southern Water
  - Portsmouth Water
  - South East Water
- National Infrastructure Consenting Planning Inspectorate website (https://national-infrastructure-consenting.planninginspectorate.gov.uk/).
- Planning applications on the New Forest District Council and Southampton City Council Planning Portals (https://www.newforest.gov.uk/article/1051/View-or-comment-on-a-planning-application and https://www.southampton.gov.uk/planning/planning-applications/).
- Marine Management Organisation – Licensing.
- Other non-planning plans and activities.

WATER COMPANY WRMPS

Southern Water

10.2.4. Both the final SWS WRMP 2019 and the final draft WRMP 2024 have been reviewed. However, neither of the plans contain options that are being newly and additionally implemented in waterbodies also potentially affected by a potential 2025 Stage 0.1 Drought Order at Testwood. It is

recognised that the final draft WRMP 2024 contains two options (Groundwater (HRZ): Remove constraints at Kings Sombourne (2.5Ml/d), and Groundwater (HRZ): New boreholes at Romsey (4.8Ml/d)) that, assuming they proceed, will result in an increase in abstraction from groundwater in the middle Test over current levels, albeit within existing licensed volumes. Whilst this may reduce river flows, the WFD No Deterioration assessment shows that flows remain compliant with both the Environmental Flow Indicator (EFI) and Common Standards Monitoring Guidance (CSMG) river flow targets. However the earliest date for either of these options to be operational is 2031 and, therefore, will not be operational in the event of a Drought Permit required in 2025.

10.2.5. Therefore there is considered to be no potential for in-combination affects between the proposed Test Surface Water Stage 0.1 Drought Order in 2025 and the SWS WRMPs.

Portsmouth Water

10.2.6. The Portsmouth Water WRMP 2025-2075 has been reviewed. However, the plan does not contain options that will be being newly and additionally implemented in waterbodies also potentially affected by a potential 2025 Stage 0.1 Drought Order at Testwood.

10.2.7. Therefore, there is considered to be no potential for in-combination affects between the proposed Test Surface Water Stage 0.1 Drought Order in 2025 and the Portsmouth Water WRMP.

South East Water

10.2.8. The South East Water WRMP 2025-2075 has been reviewed. However, the plan does not contain options that will be being newly and additionally implemented in waterbodies also potentially affected by a potential 2025 Stage 0.1 Drought Order at Testwood.

10.2.9. Therefore there is considered to be no potential for in-combination affects between the proposed Test Surface Water Stage 0.1 Drought Order in 2025 and the South East Water WRMP.

WATER COMPANY DROUGHT PLAN OPTIONS / OTHER DROUGHT ORDERS/PERMITS

Southern Water

10.2.10. A 2025 Test Surface Water Drought Permit application would have been the first drought option that SWS would have applied for in the sequence of Drought Permits and Drought Orders agreed as, and set out within, the Section 20 Agreement process in 2018 (i.e. Test Surface Water Drought Permit first, then Test Surface Water Drought Order, then Candover Drought Order and finally Lower Itchen Drought Order that would be applied for in sequence as a drought becomes more severe). In fact, for the reasons set out above an application for a similar variation to the HoF is being made by way of an application for a Stage 0.1 Drought Order. In this context there is potential for a subsequent Test Surface Water (Stage 1) Drought Order to act in-combination with other Drought applications that may have been made. However, this is the first application in the possible sequence and at this stage SWS has no plans to submit further applications for Orders in the agreed sequence.

10.2.11. Therefore no in-combination options are considered, although it is recognised that further applications in the same waterbodies will need to consider potential in combination effects.

10.2.12. There is therefore considered to be no potential for in-combination affects with other SWS drought options in 2025.

Portsmouth Water

10.2.13. The Portsmouth Water Drought Plan 2021 details the Hampshire bulk supply arrangement, whereby up to 15Ml/d of water is supplied to SWS from the Portsmouth Water River Itchen source at Gater's Mill, near the tidal limit of the river. However, the SWS Section 20 Agreement recognised that during low flows, it could be environmentally preferable to abstract water at Portsmouth Water's River Itchen abstraction point rather than at SWS abstraction points on either the River Itchen or the River Test. This would be achieved through the implementation of a Drought Order to reduce the Minimum Residual Flow condition (MRF) in our abstraction licence, from 194Ml/d to 150 Ml/d. In preparing the Section 20 Agreement, it was agreed that if a Drought Order is needed for Gater's Mill in order to allow the continuation of the bulk supply to SWS, then SWS would take responsibility for the application, environmental commitments and costs of that Drought Order. Should that coincide with the Test Surface Water Drought Permit/Order, then there would be potential for in-combination effects. However at this stage there is no expectation of the need to apply for this Drought Order.

10.2.14. There is therefore considered to be no potential for in-combination affects between the proposed Test Surface Water Drought Permit/Order in 2025 and the Portsmouth Water Lower Itchen Drought Order as detailed in their Drought Plan 2021.

South East Water

10.2.15. The South East Water Drought Plan 2022 does not contain any drought options that could act in-combination with a potential 2025 Stage 0.1 Drought Order at Testwood.

10.2.16. Therefore there is considered to be no potential for in-combination effects between the proposed Test Surface Water Stage 0.1 Drought Order in 2025 and the South East Water Drought Plan 2022.

NATIONAL INFRASTRUCTURE CONSENTING PLANNING INSPECTORATE

10.2.17. The National Infrastructure Consenting Planning Inspectorate website was reviewed for projects that have the potential to act in-combination with a Test Surface Water Stage 0.1 Drought Order in 2025.

10.2.18. The only project that has the potential to act in-combination with a Test Surface Water Stage 0.1 Drought Order in 2025 would, on a very conservative basis, be the National Highways M3 Junction 9 improvements, which is currently under construction and crosses the River Itchen SAC at Winnal, north of Winchester.

10.2.19. The HRA prepared by the Secretary of State however, concluded that, in respect of effects of the development alone, indicated that there would be no adverse effect on the integrity of the SAC provided the mitigation detailed in the proposals was implemented.

10.2.20. In respect of in -combination effects, although there was no reason for this to consider the Stage 0.1 Drought Order, the wording of the in-combination assessment conclusion is helpful as follows from paragraph 5.34: '*Subject to the implementation of mitigation measures proposed no appreciable effects are anticipated to the hydraulic conditions during construction'*. As the Test Surface Water Stage 0.1 Drought Order does not affect the River Itchen flows, it can be concluded that there is no mechanism for effects between the proposed Test Surface Water Stage 0.1 Drought Order in 2025 and the M3 Junction 9 improvements.

OTHER PLANNING APPLICATIONS - SOUTHAMPTON CITY COUNCIL

10.2.21. Southampton City Council planning portal was accessed on 13th June 2025 to identify if any significant application submitted in the last 5 years could lead to in-combination effects on any of the

designated sites. Only one application was located as detailed below, although the search was constrained by the limited search criteria available on the planning portal. The search criteria used included EIA (screening), EIA (scoping), with a follow up search for developments of the same name that have progressed to planning application.

21/00087/FUL - Newspaper House Test Lane Southampton SO16 9JX

10.2.22. The application involved redevelopment of the site, including demolition of existing buildings and the erection of three buildings for use as either general industrial (Use Class B2) and/or storage and distribution (Use Class B8) with ancillary office accommodation, together with associated access, parking and landscape and infrastructure works.

10.2.23. In-combination effects arising from road transport emissions were considered possible during the construction and operational phases.

10.2.24. The findings of the initial assessment concluded that a significant effect was likely through a number of pathways. A detailed appropriate assessment was therefore conducted on the proposed development. Following consideration of a number of avoidance and mitigation measures designed to remove any risk of a significant effect on the identified designated sites, it was concluded that significant effects can be avoided or mitigated and, therefore, no in-combination effects are predicted.

10.2.25. This application was, however, approved in November 2021 and is now likely to be part of the background and as such would not be considered to act in-combination with a Stage 0.1 Drought Order in 2025.

OTHER PLANNING APPLICATIONS – NEW FOREST DISTRICT COUNCIL

10.2.26. New Forest District Council planning portal was accessed on 13th June 2025 to identify if any significant application submitted in the last 5 years could lead to in-combination effects on any of the designated sites.

10.2.27. No significant applications were identified that have the potential to act in-combination with a Stage 0.1 Drought Order in 2025, although the search was constrained by the limited search criteria available on the planning portal. The search criteria used included EIA (screening) and EIA (scoping) with a follow up search for developments of the same name that have progressed to planning application.

OTHER PLANNING APPLICATIONS - WINCHESTER CITY COUNCIL

10.2.28. Winchester City Council planning portal was accessed on 9th July 2025 to identify if any significant application submitted in the last 5 years could lead to in-combination effects on any of the designated sites.

10.2.29. No significant applications were identified that have the potential to act in-combination with a Stage 0.1 Drought Order in 2025.

OTHER PLANNING APPLICATIONS - FAREHAM BOROUGH COUNCIL

10.2.30. Fareham Borough Council planning portal was accessed on 9th July 2025 to identify if any significant application submitted in the last 5 years could lead to in-combination effects on any of the designated sites.

10.2.31. No significant applications were identified that have the potential to act in-combination with a Stage 0.1 Drought Order in 2025, although the search was constrained by the limited search criteria available on the planning portal. The search criteria used included EIA (screening) and EIA (scoping) with a follow up search for developments of the same name that have progressed to planning application.

MARINE MANAGEMENT ORGANISATION - LICENSING

10.2.32. The Marine Management Organisation maintains a register (https://marinelicensing.marinemanagement.org.uk/mmofox5/fox/live/) containing the particulars prescribed in the Marine Licensing (Register of Licence Information) Regulations 2011. This information is held under Section 101 of the Marine and Coastal Access Act 2009. The public register was reviewed on 11 July 2025. This identified an application for 'Disposal of dredged material, Navigational dredging (maintenance)' which needs to be considered.

MLA/2025/00234 Application - Disposal of dredged material, Navigational dredging (maintenance), ABP Southampton - Maintenance Dredge Licence

10.2.33. The Case Summary indicates: *This application is a renewal of the Port's Maintenance Dredge and Disposal licence in order to maintain safe navigation of the harbour and its approaches. This necessitates the maintenance dredging of access channels and berth pockets to remove recently deposited sediment, and the disposal of this material at the Nab Tower disposal site. Maintaining safe port access for commercial and recreational maritime transport is an essential function for Harbour Authorities. The majority of dredging occurs along the main navigation channel and berth pockets along Southampton Water and the tidal Rivers Test and Itchen.*

10.2.34. The Programme of Works indicates the following: *Dredging to take place during two campaigns per annum, normally one campaign March to April and a second campaign September to October. Dredging must be able to take place at any time during the year if safety critical shoaling and siltation occurs in the Channels or Berths which requires immediate attention to ensure Safety of Navigation and Protection of the Environment. Maintenance dredging practice involves regular bathymetric surveys to determine the amount of material above a nominal maintained depth. Dredging is undertaken as necessary in response to these surveys to ensure we are fulfilling our conservancy duties as per Section 10.2 of the Port & Marine Facilities Safety Code (DfT and MCA, 2025) and Section 10.9.1 of the Good Practice Guide on Port and Marine Facilities (MCA, 2025)*.

10.2.35. The application is current (closing date 24 July 2025)

10.2.36. The Maintenance Dredge Habitats Regulations Assessment[56] has been reviewed. The Maintenance Dredge HRA considers the following potential impact pathways:

- Physical loss and/or removal of supporting habitats and associated prey resources;
- Physical damage through disturbance and/or smothering;
- Physical damage through alterations in physical processes;
- Non-toxic contamination through elevated SSC;
- Toxic contamination through release of toxic contaminants bound in sediments, and accidental oil, fuel or chemical;
- Disturbance to waterbirds through airborne noise and visual disturbance; and

[56] ABP Mer (2025). Maintenance Dredge Habitats Regulations Assessment. ABP Southampton. May 2025.

- Disturbance to Atlantic salmon through underwater noise and vibration.

10.2.37. Of the Habitats Sites considered in this Stage 0.1. Drought Order report, the Maintenance Dredge HRA concludes these pathways represent a potential for Likely Significant Effect on the River Itchen SAC, Solent and Southampton Water SPA and Ramsar, Solent Maritime SAC and the Solent and Dorset SPA.

10.2.38. The Stage 2 Appropriate Assessment considers the potential for each of the pathways in turn to result in an adverse effect on site integrity on the Habitat Sites relevant to the potential impact as follows (selected for relevance to this in-combination assessment):

- Physical loss and/or removal of supporting habitats and associated prey resources: No potential for an AEOI on the bird interest features of the Solent and Dorset Coast SPA.
- Physical damage through disturbance and/or smothering:
  - During maintenance dredging: No potential for an AEOI on the habitat and bird interest features of the Solent and Dorset Coast SPA, Solent Maritime SAC and Southampton Water and Solent SPA/Ramsar site.
  - During disposal of maintenance dredge arisings: Not relevant.
- Physical damage through alterations in physical processes: Mo potential for an AEOI on the habitat and bird interest features of the Solent and Dorset Coast SPA, Solent Maritime SAC and Southampton Water and Solent SPA/Ramsar site.
- Non-toxic contamination through elevated suspended sediment concentrations:
  - During maintenance dredging: No potential for an AEOI on the habitat and bird interest features of the Solent and Dorset Coast SPA, Solent Maritime SAC and Southampton Water and Solent SPA/Ramsar site, or the Atlantic salmon interest feature of the River Itchen SAC.
  - During disposal of maintenance dredge arisings: Not relevant.
- Toxic contamination through release of toxic contaminants bound in sediments, and accidental oil, fuel or chemical releases: No potential for an AEOI on the habitat and bird interest features of the Solent and Dorset Coast SPA, Solent Maritime SAC, Southampton Water and Solent SPA/Ramsar site, South Wight Maritime SAC or the Atlantic salmon interest feature of the River Itchen SAC.
- Disturbance to waterbirds through airborne noise and visual disturbance: No potential for an AEOI on the bird interest features of the Solent and Dorset Coast SPA and Southampton Water and Solent SPA/Ramsar site.
- Disturbance to fish through underwater noise and vibration: No potential for an AEOI on the fish prey of bird interest features of the Solent and Dorset Coast SPA, Solent Maritime SAC and Southampton Water and Solent SPA/Ramsar site, or the Atlantic salmon interest feature of the River Itchen SAC.

10.2.39. The Maintenance Dredge HRA has not identified the need for new mitigation measures to be introduced. However, it highlights that existing licence conditions include constraints on dredging and disposal, and such conditions thus form an important part of the baseline against which the potential for an AEOI have been assessed in the HRA. The measures considered are not detailed in the HRA but detailed on Marine Licence L/2015/00330/2 (not publicly available).

10.2.40. The Maintenance Dredge HRA has not considered the potential for water company drought plan activities (such as permits or orders) to act in combination with the dredging operation.

Potential for In-combination effects

10.2.41. The proposed renewal of the Port's Maintenance Dredge and Disposal Licence and hence continuation of dredging activity has the potential to act in-combination with the proposed Stage 0.1 Drought Order given that the works may coincide temporally and also geographically (in that the dredge channel extends in the lower reaches of Zone 2 in the ZoI for this study, albeit stopping well downstream of Redbridge).

10.2.42. In respect of the potential mechanisms of effect of the dredging activities on the River Itchen SAC salmon population the key comments in the Maintenance Dredge HRA are:

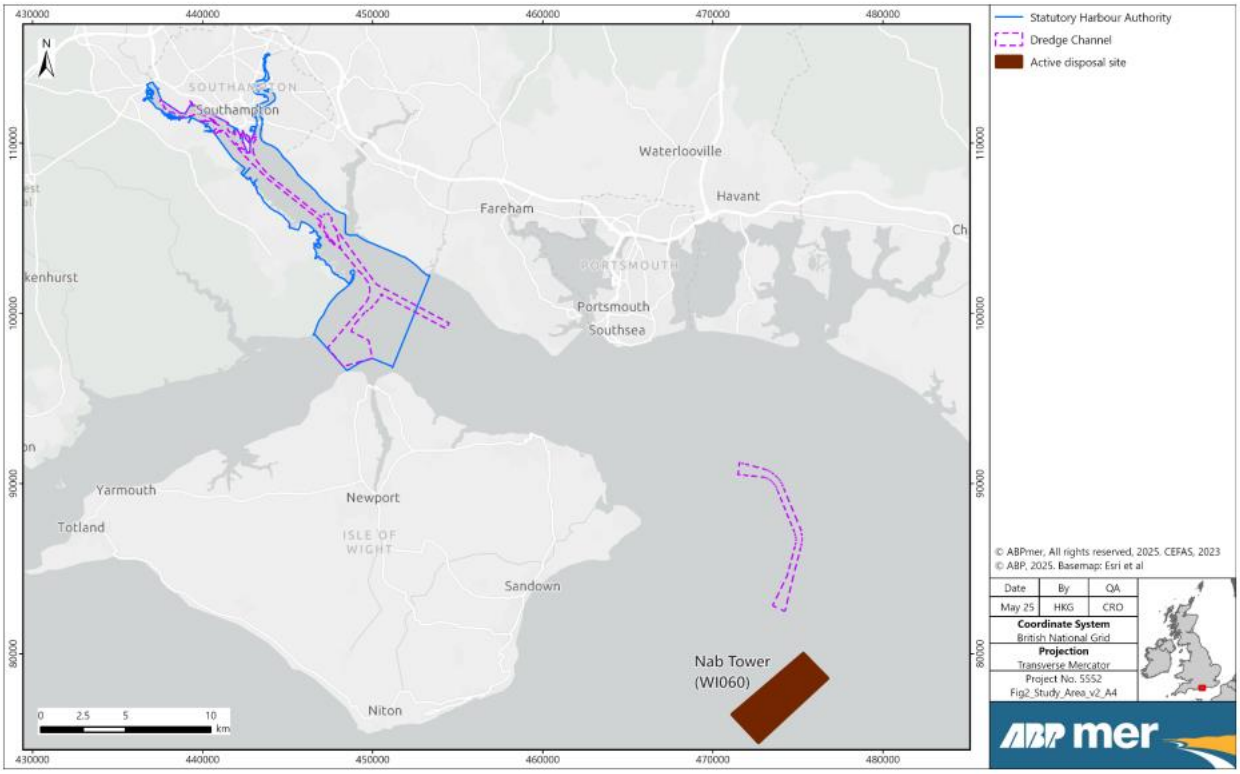
- Non-toxic contamination through elevated suspended sediment concentrations:
  - Overall the temporary and short term increase in material entering the water column as a result of maintenance dredging is small at any one time and within the limits of natural variability. Sediment plumes resulting from maintenance dredging will be relatively localised (in the context of the entire width of the estuary). It is considered that they will dissipate relatively rapidly and be immeasurable against background levels within a relatively short duration of time (less than a single tidal cycle). It follows, therefore, that salmonids and other migratory fish will also be able to avoid the temporary sediment plumes.
- Toxic contamination through release of toxic contaminants bound in sediments, and accidental oil, fuel or chemical releases:
  - *There is strict legislation and water quality assessments in place that must be adhered to in order to obtain a maintenance dredging licence. Additionally it indicates sediment quality is not considered to present an unacceptable risk to the marine environment*;
- Disturbance to fish through underwater noise and vibration:
  - *Elevated noise and vibration levels caused by the action of dredging vessels could potentially disturb fish, including Atlantic salmon.*
  - *There is considered to be a low risk of any injury to fish as a result of the underwater noise generated by dredging and vessel movements*
  - *The level of exposure will depend on the position of the fish with respect to the source, the propagation conditions, and the individual's behaviour over time. However, it is unlikely that a fish would remain in the vicinity of a dredger for extended periods given the distances at which recoverable injury or Temporary Threshold Shift (TTS) are predicted as a result of dredging and vessel movements. Behavioural responses are anticipated to be spatially negligible in scale and fish will be able to move away and avoid the source of the noise as required.*

10.2.43. Whilst the pressures identified, and conclusions drawn, may be appropriate in respect of the dredging operations themselves, the uncertainty surrounding the effects of the Stage 0.1 Drought Order on the River Itchen SAC salmon feature, and the salmon metapopulation, in the Lower Test / upper estuary, mean that it is not possible to completely rule out the potential for in-combination effects of the Stage 0.1 Drought Order when these coincide with the dredging operations. However, the in-combination effects would be expected to be minor at worst because:

- This application does not alter the background, as this is for licence renewal to allow continuation of dredging activities already undertaken twice per year, including low flow years, and on-going in one form or another for many years;

- Dredging activities are of limited duration overall (assumed to be a maximum of 30 days per season (based on a licenced maximum of 60 days per year) – but possibly less depending on need). The Stage 0.1 Drought Order will likely coincide with only one season of dredging;
- The effects of the dredging are transient in nature, with sediment plumes dispersing within a tidal cycle (ABP Mer, 2025[57]);
- Dredging locations are geographically varying – the dredge channel is extensive (see Figure 10.1 below, which is Figure 1 in ABP Mer, 2025), meaning that potential for effect on salmon is likely to be of very limited duration in any one location in the estuary;
- The dredge channel is extensive and much of it is beyond areas that will potentially be affected by the Stage 0.1 Drought Order, further limiting the potential for effect on salmon.

Figure 10-1 Potential Maintenance Dredge areas and disposal site (© ABP Mer, 2025)



10.2.44. Overall, whilst the effects are considered minor at worst, as the Stage 0.1 Drought Order has already been determined to result in an adverse effect on site integrity of the River Itchen SAC, the potential for effects to be compounded by the dredging is also recognised, albeit the assessment is considered precautionary and uncertain in nature. Therefore it is concluded that the proposed renewal of the Port's Maintenance Dredge and Disposal Licence and hence continuation of dredging has the potential to contribute to the adverse effect on the River Itchen SAC salmon feature in-combination.

10.2.45. The potential mechanisms of effect of the dredging activities on the Solent and Southampton Water SPA and Ramsar, Solent Maritime SAC and the Solent and Dorset SPA have been reviewed in the Maintenance Dredge HRA. Based on this review, and also taking account of the factors highlighted above, it is concluded that the dredging would not compound the effects of the Stage 0.1 Drought

[57] ABP Mer (2025). Maintenance Dredge Habitats Regulations Assessment. ABP Southampton. May 2025.

Order on these Habitats Sites such that there would be an adverse effect on the Conservation Objectives of these sites in-combination.

OTHER NON-PLANNING PLANS AND ACTIVITIES IN THE AREA

River Basin Management Plan 2022

10.2.46. The River Basin Management Plans (RBMP) set out how organisations, stakeholders and communities can work together to improve the water environment. Parts of the Thames RBMP and South East RBMP overlap with SWS's operational and water source catchment boundaries.

10.2.47. The RBMPs have identified potential hazards associated with the implementation of measures to address significant water management issues (SWMI). As the level of detail within the plans does not allow consideration of effects on each designated site individually, the plans have been assessed by the EA as to the potential impacts on the qualifying features of sites as a collective (e.g. 'dry grassland' across several SACs).

10.2.48. The HRAs of the RBMPs have concluded that, '*at this strategic plan level, the RBMP is not likely to have any significant effects on any Habitats sites, alone or in combination with other plans or projects. Given this conclusion, there is no requirement, at this strategic plan level, to progress to the next stage of the HRA (an 'appropriate assessment' to examine the question of adverse effects on the integrity of Habitats sites)*'.

10.2.49. This assumes that any projects arising will have their own HRA.

Shoreline Management Plans

10.2.50. Shoreline Management Plans (SMP) provide a policy context for shoreline/coastal zone management and development. The following SMPs are available within the public domain and were assessed for potential in-combination effects with the Test Surface Water Stage 0.1 Drought Order:

- SMP 13 Hurst Spit to Selsey Bill (North Solent).
- SMP 14 Isle of Wight.

10.2.51. The assessments for any potential in-combination effects between these SMPs and the Stage 0.1 Drought Order were considered with regard to spatial proximity and/or hydrological and/or hydrographical connectivity.

- Woodmill Lane to Redbridge (Option 5C12) encompasses the north bank of the Test Estuary with a Hold the Line policy until 2055 and beyond. No works are known to be planned but even if there was maintenance of existing structures in this area in 2025, there is no reason to assume that there would be any change in the physical environment of the channel, even if this occurred during the potential period of a Stage 0.1 Drought Order in 2025. Therefore, no in-combination effects are expected.
- The Lower Test Valley (Option 5C13) encompasses the Lower Test Valley SSSI with a No active intervention policy until 2055 and beyond. No change to the environment in this area is therefore expected that could act in-combination with a Test Surface Water Stage 0.1 Drought Order in 2025.
- Redbridge to Calshot Spit (Option 5C14) encompasses the south bank of the Test Estuary with a Hold the Line policy until 2055 and beyond. No works are known to be planned in 2025, but even if there was maintenance of existing structures in this area in 2025, there is no reason to assume

that there would be any change in the physical environment of the channel, even if this occurred during the potential period of a Stage 0.1 Drought Order in 2025. Therefore no in-combination effects are expected.

10.2.52. Therefore, no in-combination effects were identified in respect of the policies set out in the Shoreline Management Plans.

10.3 CONCLUSION OF IN-COMBINATION ASSESSMENT

A range of plans and projects has been considered in respect of whether they could act in-combination with a Test Surface Water Stage 0.1 Drought Order in 2025.

It is concluded that the proposed renewal of the Port's Maintenance Dredge and Disposal Licence, and hence the continuation of the maintenance dredge activities, has the potential to act in-combination with the Test Surface Water Stage 0.1 Drought Order in respect of the River Itchen SAC salmon population, albeit this assessment is considered precautionary and uncertain in nature. This conclusion also applies in respect of the River Meon Compensatory SAC Habitat, given the metapopulation status of the salmon, although the assessment remains highly precautionary and highly uncertain.

11 CONCLUSION OF STAGE 2 APPROPRIATE ASSESSMENT

11.1 SITE INTEGRITY

11.1.1. The appropriate assessment concludes with an assessment of site integrity.

11.1.2. Article 6(3) of the Habitats Directive requires that a competent authority "*shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned.*"

11.1.3. Managing Natura advice (Commission Notice C (2018)) explains the concept of the "*integrity of the site" at section 4.6.4 as the "coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated.*" The following section takes the information already assessed and reaches conclusions on European site integrity.

11.2 HABITATS SITES

11.2.1. This integrity test is made against the Conservation Objectives. These are underpinned by the supplementary advice on Conservation Objectives and the attributes identified as relevant in respect of potential for effect resulting from operation of the proposed Test Surface Water Stage 0.1 Drought Order.

11.2.2. The appropriate assessment has concluded that, of the sites considered, the following site can be screened out due to there being no mechanism of effect and hence no likely significant effect is possible:

- River Test Compensatory SAC Habitat.

11.2.3. The appropriate assessment has determined that, for those mechanisms of effect where a likely significant effect was identified, operation of the proposed Test Surface Water Stage 0.1 Drought Order will not cause or contribute to a failure to meet the attributes of the SAC, SPA or Ramsar sites listed below either alone or in combination with other plans or projects:

- Solent and Southampton Water SPA.
- Solent and Southampton Water Ramsar site.
- Solent Maritime SAC.
- Solent and Dorset Coast SPA.

11.2.4. However, no adverse effect on integrity cannot be concluded for the River Itchen SAC or for the River Meon Compensatory SAC Habitat, even with mitigation in place, in respect of operation of the Test Surface Water Stage 0.1 Drought Order alone, and in-combination with the proposed renewal of Southampton Port's Maintenance Dredge and Disposal Licence, and hence continuation of the routine maintenance dredge activities.

11.2.5. Therefore under the Habitats Regulations, and in line with the joint Defra, Welsh Government, Natural England and Natural Resources Wales guidance (2021)[58], the three legal tests required to be satisfied in order for the proposed Stage 0.1 Drought Order to qualify for a derogation are:

[58] Habitats regulations assessments: protecting a European site - GOV.UK (www.gov.uk)

1. There are no feasible alternative solutions that would meet the public interest need and yet be less damaging to, or avoid damaging, European sites (see section 12 below).
2. The proposal must be carried out for imperative reasons of overriding public interest (section 13).
3. The necessary compensatory measures can be secured (section 14).

11.2.6. These tests are addressed in the following sections.

12 STAGE 3 ASSESSMENT OF ALTERNATIVE SOLUTIONS

12.1.1. The legal test (Test 1) relating to “No Alternative Solutions” is set out under Regulation 64(1) of the 2017 Regulations which states:

> **“If the competent authority is satisfied that, there being no alternative solutions**, the plan or project must be carried out for imperative reasons of overriding public interest (which, subject to paragraph (2), may be of a social or economic nature**), it may agree to the plan or project notwithstanding a negative assessment of the implications for the European site** or the European offshore marine site (as the case may be).”

12.1.2. To allow a derogation there must be clear evidence that there is no alternative solution that would meet the relevant public interest need whilst being less damaging to, or avoid damaging, the River Itchen SAC.

12.1.3. Guidance states that an alternative solution is acceptable if it:

- achieves the same overall objective as the original proposal.
- is financially, legally and technically feasible.
- is less damaging to the European site and does not have an adverse effect on the integrity of this or any other European site.

12.1.4. Consideration of options is a key part of developing a Water Resources Management Plan (WRMP). It is important to have a suitably large and diverse set of options to choose from when coming up with solutions to meet future water needs. This process is typically carried out every 5 years with each WRMP cycle. SWS has carried out several options appraisals since publication of the WRMP 2019 (WRMP19) in an effort identify suitable alternatives to a drought permit/order on the River Test at Testwood for the Western resource area as part of the Regulators’ Alliance for Progressing Infrastructure Development (RAPID) gated process, through SWS’s ‘Water for Life Hampshire’ (WfLH) programme.

12.1.5. The extended options appraisal process has also been driven by the Section 20 Agreement SWS signed with the Environment Agency in 2018 in order to protect the River Test and River Itchen. As part of the agreement, SWS agreed to a reduction in abstraction licences on the rivers Test and Itchen and to use ‘all best endeavours’ to end our reliance of water from the rivers.

12.1.6. Most recently SWS carried out options appraisal exercise for Water Resources South East (WRSE) Regional Plan and the WRMP 2024 (WRMP24) and a targeted review of options was also undertaken following the publication of the draft WRMP24 (dWRMP24) to inform the revised draft WRMP24 (rdWRMP24) with a further refinement for the final draft WRMP24 (fdWRMP24).

12.1.7. The WRMP24 assessed over 1000 options in total across the whole SWS supply area.

12.1.8. However, it was already agreed and established through the Section 20 Agreement and existing Drought Plans and WWRMPs that there are no alternative supplies in the Western Resource Zone other than the Test Surface Water abstraction that are of sufficient magnitude or deliverable in the time for a 2025 drought application.

12.1.9. Whilst Drought Plan 2022 (DP22) and Water Resource Management Plan 2024 (WRMP2024) are still at draft status, the underlying water resources situation remains broadly similar in these plans in that no alternative sources of water of sufficient magnitude are available until such time as the

planned RAPID[59] schemes such as the South East Strategic Resource Option (SESRO) (and the associated Thames to Southern Transfer (T2ST) pipeline) and the Hampshire transfer and recycling scheme at Havant Thicket are operational alongside the Hampshire Grid. This will not be until 2035 at the earliest.

12.1.10. Existing connections do exist between Hampshire Southampton East and Hampshire Southampton West. It is possible for additional abstraction to occur from the River Itchen (surface water and nearby groundwater) to reduce reliance on Testwood but is discounted as an alternative option because:

a) the abstraction would also be from the River Itchen SAC and so no less damaging
b) the agreed Section 20 Agreement hierarchy is for Drought Permits/Orders on the River Test to be in place before increased abstraction from the River Itchen Sources.

12.1.11. It remains the case that SWS are required to follow the published drought plan actions in terms of bulk supplies, demand management, leakage reduction etc in order to minimise the amount of abstraction at Testwood below the HoF of 355Ml/d.

12.1.12. It was originally considered that the application for this HoF relaxation could be made by way of an application for a Drought Permit (consistent with the Section 20 Agreement). However, subsequent to the Section 20 Agreement, the conclusion of the Stage 2 assessment was that "*for the River Itchen SAC, it is not possible to conclude there will be no adverse effect on site integrity for the River Itchen SAC even with mitigation in place*". In consequence, consistent with the Environment Agency's guidance and advice, it was considered that an application should be made to the Secretary of State for Environment, Food and Rural Affairs for a Drought Order in relation to the proposed HoF relaxation, having considered imperative reasons of overriding public interest and provided compensation.

12.1.13. Therefore, SWS has applied for a Drought Order to lower the HoF, as opposed to Drought Permit. This approach that has been taken in light of Environment Agency's guidance and advice, and is the approach that has been assessed in this *Report to inform an assessment under Regulations 63 and 64 of the Conservation of Habitats and Species Regulations 2017* dated 16 July 2025 (Ref No. UK0028294.1948_R001.3).

12.1.14. Overall it is concluded that there are no feasible alternative solutions to the Proposed Stage 0.1 Drought Order.

[59] https://www.ofwat.gov.uk/regulated-companies/rapid/the-rapid-gated-process/

13 STAGE 4 - ASSESSMENT OF OVERRIDING PUBLIC INTEREST

13.1 OVERVIEW

13.1.1. In the absence of feasible alternative solutions, for the Stage 0.1 Drought Order to be granted it is necessary to demonstrate that there are agreed imperative reasons of overriding public interest (IROPI).

13.1.2. As there are no feasible alternative solutions identified during Test 1 of the derogation assessment, Test 2 relating to IROPI has been assessed in accordance with Regulation 64(1) of the 2017 Regulations which states:

> **"If the competent authority is satisfied that**, there being no alternative solutions, **the plan or project must be carried out for imperative reasons of overriding public interest (which, subject to paragraph (2), may be of a social or economic nature), it may agree to the plan or project notwithstanding a negative assessment of the implications for the European site** or the European offshore marine site (as the case may be)."

13.1.3. Government Guidance defines the wording as:

- imperative - it's essential that it proceeds for public interest reasons
- in the public interest - it has benefits for the public, not just benefits for private interests
- overriding - the public interest outweighs the harm, or risk of harm, to the integrity of the European site that's predicted by the appropriate assessment

13.1.4. The guidance further states that:

- If the appropriate assessment has shown that the proposal (in this case the Test Surface Water Stage 0.1 Drought Order) has failed the integrity test on a SAC and a priority habitat or species would be affected, Test 2 can only normally consider the following reasons of public interest:
  - human health
  - public safety
  - beneficial consequences of primary importance to the environment.

13.1.5. However, the key reasons in respect of public water supply are human health and public safety and therefore the commentary below focusses on these. The implications of this application in respect of risks to public safety and also the provision of beneficial consequences of primary importance to the environment are considered to be limited and unlikely to meet the criteria of being either 'imperative' or 'overriding' and therefore are not considered further in this assessment.

13.2 HUMAN HEALTH AND PUBLIC SAFETY

13.2.1. The abstraction at Testwood is licensed for 80 Ml/d and SWS's predictions are for an average of 58 Ml/d to be required during the Drought Order period (accepting that day to day demand can vary, especially during hotter periods of weather). The majority (47 Ml/d) of the water required from Testwood on average is for Public Water Supply in Hampshire Southampton West (35 Ml/d) or the Isle of Wight (13 Ml/d) via the Cross Solent Main.

13.2.2. When the River Test flow fall to the HoF under normal abstraction licence conditions, then SWS must stop abstracting.

13.2.3. Water companies are required by law to provide a continuous supply of clean water that meets strict quality standards. These rights and obligations are set out in the Water Industry Act 1991[60]. Underlying this, the UK recognises a right to water and a right to sanitation as elements of the right to an adequate standard of living in Article 11 of the International Covenant on Economic, Social and Cultural Rights.

13.2.4. Water is essential for human life and for the body to function. Among other things, it provides a medium for most chemical reactions in the body, it helps transport nutrients and it's particularly important for thermoregulation. Hydration, and provision of sufficient drinking water to maintain this, is therefore critical. Whilst a human can tolerate a certain low level of dehydration, as dehydration increases this can lead to performance decrements, poor concentration, headache and a range of other adverse health effects and illness. This is likely to be made worse by higher temperatures often associated with drought conditions.

13.2.5. Domestic uses most closely linked to human health being:

- drinking and cooking;
- sanitary facilities – toilets, bathrooms, showers;
- domestic food production; and
- washing – washing machines, dishwashers

13.2.6. Additionally, there is the requirement for continuous water supply to a range of healthcare settings (e.g. hospitals, surgeries, care and nursing homes) within the Water Resource Zone.

13.2.7. This project is therefore very clearly in the public interest at a local and regional level, given the extent of the water supply zone affected.

13.2.8. Taken together, the fundamentally human requirement for reliable water supply that will be facilitated by the Drought Order provides the IROPI background necessary to demonstrate imperative reasons of overriding public interest.

13.3 CONCLUSION

13.3.1. Overall, it is concluded that there are no feasible alternative solutions to the proposed Test Surface Water Stage 0.1 Drought Order, and that the supply of sufficient drinking water to meet demand, in order to sustain public health during a period of water scarcity in the environment, meets the requirements of being:

- 'Imperative'
- In the public interest; and
- Overriding.

13.3.2. There would be a significant risk to human health and public safety if this were not to be approved as the company would not be able to meet public demand and its legal requirements.

13.3.3. However, to qualify for derogation, adequate compensatory measures will need to be secured that are proportionate and effective at fully offsetting the damage which may be caused to the River Itchen SAC by the Stage 0.1 Drought Order abstraction. These measures are documented in the following section.

[60] https://www.legislation.gov.uk/ukpga/1991/56/contents

14 COMPENSATION

14.1 OVERVIEW

14.1.1. The conclusion of Stages 1 (screening) and 2 (appropriate assessment (AA)) of the *Information to support an assessment under Regulation 63 of the Conservation of Habitats and Species Regulations* in respect of Test Surface Water Stage 0.1 Drought Order is that an adverse effect on the integrity of the River Itchen SAC site and the River Meon Compensatory SAC Habitat cannot be discounted alone and in-combination with the proposed renewal of Southampton Port's Maintenance Dredge and Disposal Licence and hence continuation of maintenance dredging activity. This conclusion is reached due to the potential effect of the reduction of flows in the River Test below the licensed HoF on the River Itchen SAC salmon population and the salmon population of the River Meon Compensatory SAC Habitat, with effects in the estuary potentially compounded by the continuation of dredging.

14.1.2. SWS has demonstrated, in the preceding sections, that there are 'no alternative solutions' (Stage 3) to the Stage 0.1 Drought Order with the need to continue supplying water to customers, and that there are 'imperative reasons of overriding public interest' for (Stage 4) for the Stage 0.1 Drought Order application in line with the requirements of the Habitats Regulations.

14.2 SUMMARY OF HRA STAGE 2 CONCLUSIONS

14.2.1. The Stage 2 assessment for the River Itchen SAC concluded that, prior to mitigation, given the poor state of the Itchen SAC salmon population, i.e. recent historically low numbers of returning adult salmon, even the potential for loss of a probable small number of salmon as a result of implementation of the Stage 0.1 Drought Order would be considered to represent a failure against the relevant site Conservation Objectives in respect of salmon. Additionally, channel conditions have been described that could alter the distribution of the species, potentially preventing them from entering the river and being lost to the spawning population entirely.

14.2.2. Mitigation measures available to SWS that are implemented for this application are relatively limited in number and, with the exception of the Blackwater which is used more by sea trout than salmon, likely to have a local benefit only. Given the difficulty in quantifying the effects of the Stage 0.1 Drought Order on the physical environment and hence then on the salmon population, taking the precautionary approach it is not possible to conclude beyond reasonable scientific doubt that these measures will fully mitigate the potential for effect on the salmon population.

14.2.3. The same conclusion has been drawn in respect of the salmon population of the River Meon Compensatory SAC Habitat. However, it should be highlighted that this is a highly uncertain and highly precautionary conclusion in respect of this site.

14.2.4. Additionally, the proposed renewal of Southampton Port's Maintenance Dredge and Disposal Licence and hence continuation of maintenance dredging activity is considered to act in-combination with the Stage 0.1 Drought Order on the salmon population of the River Itchen SAC and River Meon Compensatory SAC Habitat, albeit this assessment is considered precautionary and uncertain in nature.

14.2.5. Therefore, it is necessary to develop compensatory measures that benefit the Itchen salmon population. The measures also need to benefit the salmon of the River Meon Compensatory SAC Habitat. However, the highly uncertain and precautionary assessment conclusion makes it a

challenge to define the extent of compensation needed, but given the uncertainty and because of the metapopulation nature of the salmon population, it has been assumed that the compensation defined in respect of the Itchen SAC is sufficient in respect of both the SAC and Compensatory SAC Habitat.

14.3 COMPENSATORY HABITAT

14.3.1. The physical effects of the Stage 0.1 Drought Order are restricted to the River Test and upper Test estuary.

14.3.2. SWS has therefore proposed compensatory measures on the River Itchen. This has the key feature of maximising benefit to the River Itchen salmon population itself, but which will also likely benefit the salmon population across the three rivers through increased resilience and sustainability.

WOODMILL ACTIVITY CENTRE

14.3.3. Woodmill Activity Centre is used here to describe Woodmill Salmon Pool and connection to Monks Brook and the River Itchen and land in between.

14.3.4. Woodmill sluice is located at Woodmill Activity Centre (approximate National Grid Reference SU4396015235) and connects Woodmill Salmon Pool to the River Itchen. The sluice is known to be a significant issue for salmon trying to enter the River Itchen:

- the large sluice gate and the old fish pass represent one of the first barriers that salmon and sea trout are required to negotiate when moving from the estuary into the lower river;
- the pool is fished and any fish held up here are vulnerable to increased exploitation through angling pressure or predation; and
- the in channel conditions for salmon in the pool below the sluice are sub-optimal, with no shade available to limit warming of the water by direct sunlight and no refuge areas.

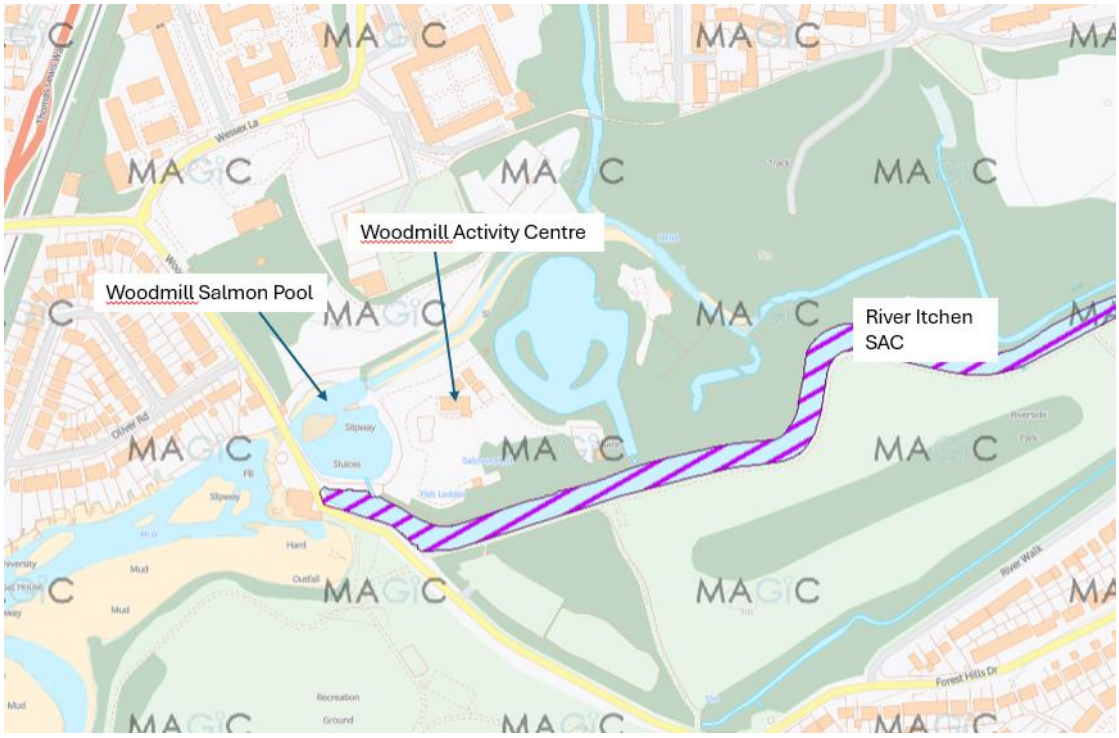
PROPOSALS

14.3.5. Woodmill Activity Centre (**Figure 14-1**) has recently been put up for sale by Southampton City Council and SWS has been informed by the Council that their bid, which is jointly made with the Scouts, is the preferred bid, and will be going to cabinet for the final approval in July 2025.

14.3.6. As part of their bid SWS put forward the following proposals:

- improve fish passage between Woodmill Salmon Pool and the River Itchen, with the known current issues of the sluice structures and current fish pass
- alter management of Salmon angling on the pool and areas controlled by SWS; and
- improve in channel conditions for salmon in the pool by, for example, increasing shade provision to reduce the warming effects of the sun on the pool.

Figure 14-1 Location of Woodmill Activity Centre and Salmon Pool (© Magic.gov.uk)



14.3.7. The proposed measures are located outside, immediately downstream of, and bordering, the River Itchen SAC (**Figure 14-1**). Whilst it is possible that some of the planned enhancement work will be required on the bank of the river in the designated reach, the measures will result in significant enhancement of fish passage, improved habitat conditions for salmon when refuge within the pool is required and reduced stress for fish related to angling that will significantly outweigh any potential for very localised disturbance of the bank.

14.3.8. Alongside the development of detailed proposals, SWS will develop and implement a monitoring plan in consultation with the EA and NE, which will include both pre- and post-scheme monitoring to demonstrate the effectiveness of the compensation proposed. Monitoring will be undertaken by SWS or its nominated monitoring contractor, with elements also potentially undertaken by the Environment Agency (subject to agreement).

14.3.9. The principles of the proposals have been discussed with the EA and NE during the bidding process for the purchase, and have been agreed as significantly beneficial to the salmon population on the River Itchen.

14.3.10. Once the purchase is complete there will be a staged approach to implementation of the proposed measures:

- The management of salmon angling will be altered, most likely reduced in intensity, almost immediately. This will be undertaken in collaboration with the fishery
- In respect of improvements to fish passage and introduction of shading and fish refuge areas in Woodmill Salmon Pool, there will be a feasibility and design stage (expected to be completed 2027) followed by an implementation programme, with implementation expected in 3 years time (expected to start in 2028), subject to planning, permitting and public engagement.

14.3.11. SWS proposals at Woodmill Activity Centre will make a significant contribution towards achieving the objectives of the recently launched Itchen Salmon Delivery Plan, which is '*a collaborative initiative uniting conservation groups, fisheries experts, and environmental organisations in a concerted effort to save this endangered population. Through habitat restoration, improved fish passage, water quality initiatives, water resources management, and community engagement, the ISDP is taking a holistic approach to tackling the challenges salmon face*' (https://www.hiwwt.org.uk/save-our-salmon).

14.3.12. The benefits realised by the proposals in respect of the salmon population will include:

- Reduced losses of salmon to predation when they are held up at Woodmill sluice;
- Reduced losses due to post-capture stress. Although anglers return all salmon to the river following capture, only 80% of these may survive to spawn and there is also a reported further sublethal loss of reproductive success from the stress of capture and release which can be a further 30% (see the Salmon Note in the Appendix B). Where rod exploitation is high, such as on the Test and Itchen this is very important. Restriction of angling pressure at Woodmill Salmon Pool will result in fewer salmon being captured, and hence more surviving to spawn. Whilst it is recognised they will still be susceptible to capture further upriver, SWS will have done what it can to reduce that pressure.
- Increased rate of salmon passage up river by improving passage, thereby providing improved access to the whole SAC upstream.
- Improved downstream salmon smolt passage.
- Enhancing passage can be also expected to benefit salmon through reduced energy expenditure and metabolic stress, reduce exposure to thermal stress, improved migration success and improved spawning success. As for post-capture stress above, whilst it is recognised that there are other structures on the Itchen that slow salmon passage, SWS will have done all it can at Woodmill Salmon Pool to reduce physical stresses on salmon entering the SAC.

14.4 CONCLUSIONS

14.4.1. Based on professional judgement, and having taken advice from the EA and NE during two meetings, these benefits are considered to exceed the residual adverse effects of the Drought Order that remained after mitigation has been taken into account. Moreover, these proposals are considered to meet criteria required for them to be considered as compensation as:

- SWS will imminently become owners of Woodmill Activity Centre. Therefore, these proposals can be considered to be secured, as required by the Habitats Regulations.
- The proposed measures will result in significant enhancement of fish passage, improved habitat conditions for salmon when refuge within the pool is required and reduced stress for fish related to angling.

14.4.2. Furthermore, in respect of the key considerations for compensation detailed on the .GOV.UK website the following points are important:

- Feasibility: The measures will be technically feasible as they will undergo feasibility and design optioneering stages prior to implementation. The measures proposed are expected to be effective in respect of the benefits discussed.
- Financial viability: SWS is confident that the measures are financially viable. Having purchased Woodmill Activity Centre, SWS is committed to delivery of the measures discussed.

- Delivery of measures: SWS is committed to the delivery of the measures, managed by an in-house team supported by external experts on the design, implementation, management and monitoring as required.
- Distance from the SAC: The proposals are for enhancements immediately adjacent to, but downstream of, the River Itchen SAC and hence will benefit all salmon returning to the River Itchen (this is not within the impacted reaches / ZoI).
- Time to become effective: Restriction of angling and improved fish passage will be effective compensation almost as soon as they are implemented. Habitat enhancements in/around Woodmill Salmon Pool may take longer to establish given the time for trees to grow and for refuge areas to be established.

14.4.3. Overall SWS is responsible for delivery of the measures and is committed to making rapid progress on these proposals for compensatory measures that will be significantly beneficial to the River Itchen salmon population and off-set the residual potential effects of the Test Surface Water Stage 0.1 Drought Order.

Appendix A

APPROACH TO HRA STAGES 1 AND 2

APPENDIX A – APPROACH TO HRA STAGES 1 AND 2

A.1 ASSESSMENT

DATA COLLECTION

Data sources and context

The screening and appropriate assessment stages take account of the baseline condition of European sites and their interest features61, including (where reported) data on

- the site boundaries and the boundaries of the component SSSIs;
- the Conservation Objectives;
- information on the attributes of the European sites that contribute to and define their integrity;
- the condition, vulnerabilities and sensitivities of the sites and their interest features, including known pressures and threats;
- the approximate locations of the interest features within each site (if reported); and
- designated or non-designated 'functional habitats' (if identified).

These data are derived from, where available / relevant:

- the most recent JNCC-hosted GIS datasets;
- the Standard Data forms for SACs and SPAs and Information Sheets for Ramsar sites;
- Article 12 and 17 reporting;
- the published site Conservation Objectives;
- Supplementary Advice to the Conservation Objectives (SACO) where available[62];
- Site Improvement Plans (SIPs); and
- the supporting Site of Special Scientific Interest's favourable condition tables where relevant and where no SACOs applicable to the features are available.

Note:

- For SPAs, the qualifying features are taken as those identified on the most recent JNCC datasets and citations, or NE Conservation Objectives sheets, where these post-date the 2nd SPA Review (i.e. it will be assumed that any amendments suggested by the SPA review have been made) unless otherwise explicitly identified by NRW or NE.
- The Conservation Objectives for Ramsar sites are taken to be the same as for the corresponding SACs / SPAs (where sites overlap); SSSI Definition of Favourable Condition (FCTs) are used for those Ramsar features not covered by SAC/SPA designations.

[61] The term 'interest features' is often used interchangeably with 'qualifying features', but is more appropriately used as a broader term covering the qualifying species and other within-site features that may be relevant to site integrity, particularly 'typical species' (for SACs) and within-site supporting habitats for mobile species.

[62] NE has published '*Supplementary advice on conserving and restoring site features*' for most European sites in England which describe in more detail the range of ecological attributes which are most likely to contribute to a site's overall integrity, and qualitative or quantitative targets for each attribute.

Where possible the site data are used to identify other features that may be relevant to site integrity, particularly 'typical species' (for SACs), within-site supporting habitats, and non-European site or non-designated 'functionally linked habitats'.

A 'typical species' is broadly described by EC guidance as being any species (or community of species) which is particularly characteristic of, confined to, and/or dependent upon the qualifying Annex I habitat feature at a particular site. This may include those species which:

- are critical to the composition or structure of an Annex I habitat (e.g. constant species identified by the National Vegetation Classification (NVC) community classification);
- exert a critical positive influence on the Annex I habitat's structure or function (e.g. a bioturbator (mixer of soil/sediment), grazer, surface borer or predator);
- are consistently associated with, and dependent upon, the Annex I habitat feature for specific ecological needs (e.g. feeding, sheltering), completion of life-cycle stages (e.g. egg-laying) and/or during certain seasons/times; or
- are particularly distinctive or representative of the Annex I habitat feature at a particular site.

Within-site supporting habitats are those which support the population(s) of the qualifying species and which are therefore critical to the integrity of the feature.

'Functionally linked habitats' or 'functionally-linked land' (FLL) are generally taken to be habitats or features outside a European site boundary that are important or critical to the functional integrity of the site's habitats and / or its qualifying features. These might include, for example:

- 'buffer' areas around a site (e.g. dense scrub areas preventing public access; areas of land that reduce the effects of agricultural run-off; etc.);
- specific features or habitats relied on by mobile species during their lifecycle (e.g. high-tide roosts for waders; significant maternity colonies for bats known to hibernate within an SAC; areas that are critical for foraging or migration; etc), recognising that 'functionally-linked' is not intended as a speculative catch-all covering any habitat that might be occasionally used by, or suitable for, a particular species[63]).

Conservation Objectives

Conservation Objectives benchmark Favourable Conservation Status (FCS) for each feature. Guidance64 from the UK Statutory Nature Conservation Bodies (SNCBs) provides a broad characterisation of FCS, stating that it "relates to the long-term distribution and abundance of the populations of species in their natural range, and for habitats to the long-term natural distribution, structure and functions as well as the long-term survival of its typical species in their natural range. It describes a situation in which individual habitats and species are maintaining themselves at all relevant geographical scales and with good prospects to continue to do so in the future".

[63] Case law notes that such land should be necessary to the conservation of the protected habitat types and species *(Holohan v An Bord Pleanala C-461/17)* or play an important role in maintaining or restoring the population of qualifying species at favourable conservation status.

[64] JNCC (2018). *Favourable Conservation Status: UK Statutory Nature Conservation Bodies Common Statement* [online]. Available at: https://data.jncc.gov.uk/data/b9c7f55f-ed9d-4d3c-b484-c21758cec4fe/FCS18-InterAgency-Statement.pdf. [Accessed March 2022].

FCS is an underpinning principle of the Conservation of Habitats and Species Regulations 2017 and by extension other legislation such as the Water Environment (Water Framework Directive) England & Wales) Regulations 2017

The Conservation Objectives for European sites in England have been revised by NE in recent years to improve the consistency of assessment and reporting. As a result, the high-level Conservation Objectives for all SACs and SPAs use the same format and include one or more of the following provisions (depending on the site qualifying features):

For SACs in England:

- *With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features'...), and subject to natural change; ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring* [as applicable to the specific qualifying features of each site];
    - *The extent and distribution of the qualifying natural habitats;*
    - *The extent and distribution of the habitats of qualifying species;*
    - *The structure and function (including typical species) of the qualifying natural habitats;*
    - *The structure and function of the habitats of qualifying species;*
    - *The supporting processes on which the qualifying natural habitats rely;*
    - *The supporting processes on which the habitats of qualifying species rely;*
    - *The populations of qualifying species; and,*
    - *The distribution of qualifying species within the site.*

For SPAs in England:

- *With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features'...), and subject to natural change; ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:*
    - *The extent and distribution of the habitats of the qualifying features;*
    - *The structure and function of the habitats of the qualifying features;*
    - *The supporting processes on which the habitats of the qualifying features rely;*
    - *The population of each of the qualifying features; and*
    - *The distribution of the qualifying features within the site.*

NE has published 'Supplementary advice on conserving and restoring site features' (SACO) for most European sites in England which describe in more detail the range of ecological attributes which are most likely to contribute to a site's overall integrity, and which identify qualitative or quantitative targets for each attribute. The targets identify the desired state for the attribute (i.e. to help ensure the site's Conservation Objectives are met) but do not represent thresholds to assess the significance of any given effect in HRAs. However, a proposal should not prevent the achievement of those targets. The attribute targets are considered at the screening and appropriate assessment stages, where relevant.

The Conservation Objectives for Ramsar sites are taken to be the same as for the corresponding SACs / SPAs (where sites overlap); where Ramsar sites do not coincide with an SAC or SPA, or

where the Ramsar features are not ecologically coincident with SAC or SPA features, the Conservation Objectives and definitions of favourable condition for the underlying SSSIs are used.

The Conservation Objectives are considered at both screening and appropriate assessment stages, but are not explicitly reproduced in this report as (a) they are freely available online and (b) the narrative nature of many of the conservation objective targets can be challenging to co-opt in a clear and concise manner. The assessments therefore focus on the key Conservation Objectives that might be undermined by the proposals, rather than attempting to exhaustively document the assessment of the proposals against all Conservation Objectives for all features. Information on the sensitivities of the interest features also informs the assessment.

SCREENING AND APPROPRIATE ASSESSMENT

Guidance

The following general guidance has been applied to the HRA:

- UK Government (2019). *Appropriate assessment: Guidance on the use of Habitats Regulations Assessment* [online]. Available at: https://www.gov.uk/guidance/appropriate-assessment [Accessed June 2025].
- Tyldesley, D. & Chapman, C. (2024). *The Habitats Regulations Assessment Handbook* [online]. DTA Publications Limited. Available at: https://www.dtapublications.co.uk/handbook/. [Accessed June 2025].
- EC (2019). *Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. Available at: https://op.europa.eu/en/publication-detail/-/publication/caf47cb6-207a-11e9-8d04-01aa75ed71a1/language-en/format-PDF/source-search*. [Accessed June 2025].
- Natural England (2020). *Guidance on how to use Natural England's Conservation Advice Packages in Environmental Assessments.* Natural England, Peterborough.
- Defra (2012). *The Habitats and Wild Birds Directives in England and its seas: Core guidance for developers, regulators & land/marine managers* [online]. Available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/82706/habitats-simplify-guide-draft-20121211.pdf. [Accessed June 2025].
- SNH (2019). SNH Guidance Note: *The handling of mitigation in Habitats Regulations Appraisal – the People Over Wind CJEU judgement* [online]. Scottish Natural Heritage. Available at: https://www.nature.scot/sites/default/files/2019-08/Guidance%20Note%20-%20The%20handling%20of%20mitigation%20in%20Habitats%20Regulations%20Appraisal%20-%20the%20People%20Over%20Wind%20CJEU%20judgement.pdf. [Accessed June 2025].

Additional topic-specific guidance or standards (for example, Common Standards Monitoring Guidance (CSMG)) is used as required and identified within the relevant assessment sections.

Assessment Outline

As noted (see Box 1) the 'screening' test or 'test of significance' is a low bar, intended as a trigger rather than a threshold test; an 'appropriate assessment' stage (if required) allows for a closer examination of the project where the effects are significant or uncertain65 to determine whether any

[65] i.e. 'likely significant effects', where the possibility of significant effects cannot be excluded.

European sites will be subject to 'adverse effects on integrity' as a result of the implementation of the Drought Permit.

Note, many SPAs and Ramsar sites are largely coincident, both spatially and in terms of features and ecological functionality; within this document SPA and Ramsar site names may therefore be combined with the suffix "SPA/Ramsar" for simplicity where this is not material to the assessment of specific sites or features. In addition, sites may be assessed collectively (for clarity and to reduce repetition) where there are substantive overlaps in effect pathways or mechanisms, although the conclusions will always relate to the sites individually.

Screening

The geographic scope of the screening assessment is based on the anticipated environmental changes associated with the proposal (see Section 3), moderated by professional judgement and any relevant consultations that may identify more complex or secondary pathways by which sites or features might be affected. For simplicity, 'distance buffers' may be used to identify sites that are explicitly considered through the screening process66.

The screening assessment initially excludes those sites and features that will self-evidently be unaffected by the proposals due to the features either being clearly not exposed to the likely effects, or not sensitive to them (taking into account any relevant 'moderating factors' but not specific mitigation measures (see below and Section 3)).

Potential pathways for effects (i.e. where a feature is potentially exposed and sensitive to a particular environmental change) are then examined to determine whether the possibility of the site's Conservation Objectives being undermined can be objectively excluded. Potential effects are considered for the Drought Permit 'alone' and (where the effect alone is not nil or entirely nugatory) 'in combination' with other activities locally (see 'in combination', below).

Appropriate Assessment

An 'appropriate assessment' involves a closer examination of the proposal to determine whether there will be 'adverse effects on integrity' of any European sites or features. The scope of any 'appropriate assessment' is not set and such assessments need not be extremely detailed: they must simply be 'appropriate' to the effects and proposal being considered, and sufficient to ensure that:

- there is no 'reasonable' doubt[67] that adverse effects on site integrity will not occur; and/or

[66] 'Arbitrary' distance buffers are not generally appropriate for HRA. However, as distance is a strong determinant of the scale and likelihood of effects, the application of a suitably precautionary buffer (based on a thorough understanding of the proposal outcomes and European site interest features) has some important advantages: using buffers allows the systematic identification of European sites using GIS, so minimising the risk of sites or features being overlooked; it ensures that sites for which there are no reasonable impact pathways can be quickly and transparently excluded from any further screening or assessment; and it provides a consistent point of reference for consultees following the assessment process, and the 'screening' can therefore focus on the assessment of effects, rather than on explaining why certain sites may or may not have been considered in relation to a particular aspect.

[67] Note, although the 'precautionary principle' applies the test does not require 'absolute certainty' that an effect will not be adverse – simply that the reasonably foreseeable risks (i.e. those that are not entirely speculative or hypothetical) are not adverse, taking account of data and information that can reasonably be

- that any adverse effects are appropriately defined (quantitatively or qualitatively) to inform Stages 3 and 4 of the process (if required), particularly in relation to the design and assessment of the necessary compensatory measures.

The 'integrity' of a site is defined as “the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was designated”68. It is inherently linked to FCS and hence the Conservation Objectives (see above); site integrity would be adversely affected by an activity if it undermines the Conservation Objectives such that:

- the FCS of a feature is not maintained; or
- achievement of FCS is prevented, if the conservation status is currently unfavourable (e.g. by further harming the feature or making restoration to FCS more difficult).

Integrity therefore involves the long-term preservation of the qualifying features of the European site, regardless of whether those features are ‘priority’ features or otherwise irreplaceable.

The integrity test is necessarily site- and feature-specific, and effects that are adverse for one European site or habitat will not necessarily be so for another. However, permanent negative effects on the qualifying features of a site (such as loss of habitat resource) will almost always be regarded as adversely affecting integrity. Arguments for ‘no adverse effect’ relating to the scale of habitat loss (either in absolute or relative terms) can be made, particularly if the impact is entirely trivial, but relatively small-scale habitat losses (e.g. 0.1% or less of a site) are nevertheless often deemed adverse; and for large European sites this will be a large area in absolute terms (and so more likely to affect habitats critical to the ecological functioning and coherence of the site). In contrast, case law69 suggests that ‘temporary effects’ that are reversible in a reasonable timescale are less likely to be considered ‘adverse’.

As noted, the targets for the site attributes identified in the SACO identify the desired state for the attribute (i.e. to help ensure the site’s Conservation Objectives are met) but do not represent thresholds to assess the significance of any given effect in HRAs. However, a proposal should not undermine or prevent the achievement of those targets.

In Combination

In combination effects might occur where the environmental impacts associated with two or more schemes overlap spatially and / or temporally (and so operate additively to increase the magnitude of change, e.g. dust deposition from two developments affecting the same site, either at the same or different locations), are sequential (so increasing the duration of an impact), or synergistic in some way (e.g. changes in both lighting and noise that affect bat species, perhaps at different locations or points in their lifecycle).

obtained. Certainty over outcome can be introduced through other pathways, for example legally-enforceable provisions (such as planning conditions) or by using conservative assessment assumptions.

[68] https://www.gov.uk/guidance/appropriate-assessment. Paragraph: 003 Reference ID: 65-003-20190722. Revision date: 22/07/2019

[69] Case C-258/11 (Sweetman v An Bord Pleanála and others).

In combination assessments typically focus on possible interactions with known proposals that have not yet been delivered (as proposals that are 'operational' at the point of the HRA will typically be considered as part of the baseline). This might include (based on the Habitats Regulations Handbook70):

- applications that have been submitted but not determined
- authorised projects, or project that do not require authorisation, that are not yet started;
- proposals in adopted plans or in draft plans submitted for final consultation, examination or adoption.
- operations or projects subject to periodic review (e.g. annual licences), during the time that their renewal is under consideration.

The identification of 'in combination' plans and projects is based on the 'zone of influence' for the proposals and the outcomes of the screening process (i.e. if the proposals 'alone' will have 'no effect' on a particular European site then there cannot be 'in combination' effects).

Mitigation

It should be noted that the "People Over Wind" judgement71 has altered how mitigation and avoidance measures are accounted for in an HRA. The judgement states that "…it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects [mitigation] of the plan or project on that site". This contrasts with established practice in this area whereby avoidance and mitigation measures were typically considered at screening.

The broader context of the 'People over Wind' case suggests that the judgement is principally focusing on those instances where specific measures are included in a scheme or otherwise relied on to avoid a specific effect that has been identified, and which would otherwise be significant; the judgement argues that this presupposes that it is likely that the site is affected significantly, and that the effectiveness of any such measures should therefore be examined through an appropriate assessment stage. The use of "intended to..." in the judgement therefore has some relevance.

Information on the practical implementation of the 'People over Wind' judgement is variable, and many fundamental aspects of a proposal might be interpreted as 'avoidance' or 'mitigation' measures if viewed solely in terms of their implications for European sites. For example, selecting LED lighting for a site would likely be made purely on performance grounds, although it might be interpreted as mitigation if there is an SAC designated for bats nearby. Clearly, however, a detailed examination of the engineering choices made during design to see if they might count as 'mitigation' for screening purposes would not be proportionate, or (arguably) consistent with the intent of the Habitats Directive.

In this instance, therefore:

[70] Tyldesley, D. & Chapman, C. (2024). The Habitats Regulations Assessment Handbook [online]. DTA Publications Limited. Available at: https://www.dtapublications.co.uk/handbook/. [Accessed June 2025].

[71] Court of Justice of the European Union (ECJ) Case C-323/17 - People over Wind, Peter Sweetman v Coillte Teoranta, preliminary ruling.

- The screening **does not** take account of any measures that are included in response to a specific identified effect on a European site, and which are intended to avoid or reduce that effect (for example, licence capping).
- Design or implementation choices made for engineering reasons, or which would be required irrespective of the presence of any European sites (either legally, or as a matter of standard practice), are considered to be an inherent part of the proposal being screened.
- External anthropogenic moderating factors or protocols that incidentally ensure that potential effects are avoided (e.g. the absence of drainage pathways due to existing drainage layouts; or the ongoing implementation of agreed pollution-prevention measures for existing or coincident operations) are simply taken to be part of the baseline.

Mitigation hierarchy

Under HRA guidance72 there is a mitigation and compensation hierarchy which are split into 4 categories, with the first 3 relating to mitigation and the final one relating to compensation measures. Comparable measure definitions are also detailed within the 2017 EIA Regulations73 (referred to for comparison and linkage in Table A-1). The hierarchy should be applied in a sequential manner, exhausting the possibilities of one level before proceeding to the next with a focus on preventing and then minimising the specific identified impacts upon the Conservation Objectives.

Table A-1 - HRA and EIA mitigation and compensatory measures

Mitigation Measure types	
HRA	**EIA**
Avoidance: stop or prevent effects from occurring, or, eliminate (completely remove or get rid of) the risk of them occurring e.g. removing from a plan or project the element that may cause an adverse effect. To prevent one type of effect on a site may not prevent or reduce all of the other potential effects, so there may still be a need for further assessment taking the plan or project as a whole.	**Primary or Embedded** – included as part of the project design.
Cancellation: completely neutralise or fully negate adverse effects. Eliminating one type of effect on a site may not prevent or reduce other effects, so there may still be a need for further assessment taking the plan or project as a whole.	**Tertiary** – required as part of legislative requirements or standard good practice. **Secondary** – proposed to avoid effects occurring or to minimise environmental effects
Reduction: intended to make an effect smaller or less in amount, degree, size or likelihood, either by reducing the effect itself, or the likelihood of its occurring, or both. May reduce the severity of the effect or the likelihood of its occurrence, that it can no longer be regarded as a possible significant	

[72] Tyldesley, D. and Chapman C. The Habitats Regulations Assessment Handbook. Published and updated online by DTA Publications Limited: http://www.dtapublications.co.uk/handbooks.
[73] https://www.legislation.gov.uk/uksi/2017/571/contents

adverse effect on integrity. Risk of some residual effect that still needs to be assessed.	
Compensation: intended to offset, or make up for, the harm to the integrity of a European site. Recognition that the harm cannot be further reduced. Necessary to ensure overall coherence of National Site Network.	**Further** – could further prevent, reduce and, where feasible, offset any residual adverse effects on the environment.
	Monitoring – to ensure that proposed mitigation becomes established. Not specifically defined within HRA guidance but could be of relevance to the Test HRA and is suggested should be adopted as a 4th mitigation hierarchy stage.

There are also two additional terms related to mitigation measures under HRA process;

- Incorporated Mitigation Measures (IMM) – measures which are built into the plan or project. Also referred to as 'embedded mitigation' or 'mitigation by design'.
- Additional Mitigation Measures (AMM) – measures over and above the incorporated mitigation measures.

The hierarchy of mitigation measures could all be classified as IMM's or AMM's depending on their specific linkage with the design and specific operation of the Project being assessed under the HRA. Where possible IMM's should be prioritised and assessed as part of the HRA Stage 2 Appropriate Assessment as 'embedded' measures.

Further to this mitigation hierarchy is the process of Additionality. Additionality is the extent to which something happens as a result of an intervention that would not have occurred in the absence of the intervention. With respect to the HRA guidance, this refers to a measure (or property of measures) where the conservation outcomes that are delivered are demonstrably new and additional and would not have resulted without the measure being implemented.

Appendix B

SALMON TECHNICAL NOTE

APPENDIX B – SALMON TECHNICAL NOTE, REV 2.3, DRAFT

Appendix C

FIELD SURVEY SUMMARY RESULTS

APPENDIX C – FIELD SURVEY SUMMARY RESULTS

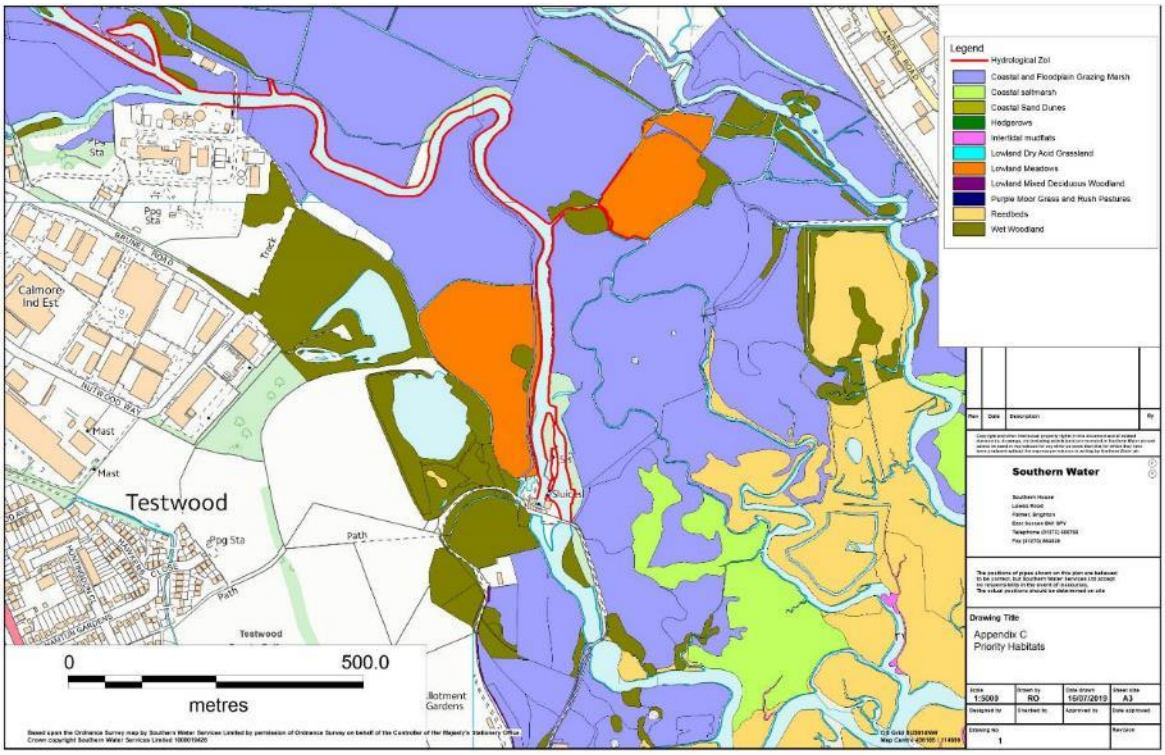
Date & Duration (hrs)	Weather Conditions	High / Low Tide (hrs) at Redbridge	Species		Count (estimate in parenthesis)
20/11/19 09:16 – 11:04	7°C 12mph SE 3 oktas	10:06 LT	Canada Goose Wigeon Mallard Teal Little Grebe Redshank Little Egret Kingfisher	Branta canadensis Mareca penelope Anas platyrhynchos Anas crecca Tachybaptus ruficollis Tringa totanus Egretta garzetta Alcedo atthis	225 33 13 52 1 1 2 1
09/12/19 09:30 – 11:15	8°C 25mph NW 0 oktas	08:18 & 11:21 HT	Canada Goose Wigeon Mallard Teal Moorhen Little Grebe Lapwing Curlew Redshank Grey Heron Little Egret	Branta canadensis Mareca penelope Anas platyrhynchos Anas crecca Gallinula chloropus Tachybaptus ruficollis Vanellus vanellus Numenius arquata Tringa totanus Ardea cinerea Egretta garzetta	108 44 5 (142) 1 4 74 1 11 1 1
31/01/20 08:41 – 10:38	10°C 16mph SW 8 oktas	08:01 LT	Canada Goose Wigeon Mallard Teal Moorhen Lapwing Curlew Grey Heron Cetti's Warbler*	Branta canadensis Mareca penelope Anas platyrhynchos Anas crecca Gallinula chloropus Vanellus vanellus Numenius arquata Ardea cinereal Cettia cetti	192 406 4 11 3 62 2 1 4
28/02/20	9°C 20mph SSW 8 oktas	13:33 HT	Canada Goose Mute Swan Wigeon Teal Moorhen Curlew Little Egret	Branta canadensis Cygnus olor Mareca penelope Anas crecca Gallinula chloropus Numenius arquata Egretta garzetta	143 1 359 3 1 1 4
11/03/20	12°C 17mph WSW 6 oktas	11:56 HT	Canada Goose Wigeon Mallard Moorhen	Branta canadensis Mareca penelope Anas platyrhynchos Gallinula chloropus	5 132 2 1

* incidental record

Appendix D

LOWER TEST PRIORITY HABITAT MAP

APPENDIX D – LOWER TEST PRIORITY HABITAT MAP



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