BRISTOL WATER – WATER RESOURCES MANAGEMENT PLAN 2024

Habitats Regulations Assessment

Information to support an assessment under Regulation 63 of the *Conservation of Habitats and Species Regulations 2017*

Report for: Bristol Water

Ref. WRMP24 Environmental Assessment Support

Ricardo ref. ED15765 Issue: 5 18 October 2024

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Date:
18 October 2024

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1. INTRODUCTION

1.1 BACKGROUND AND PURPOSE OF REPORT

Water companies in England and Wales are required to produce a Water Resources Management Plan (WRMP) every five years. The Plan sets out how the company intends to maintain the balance between supply and demand for water over the long term planning horizon in order to ensure security of supply in each of the water resource zones making up its supply area.

A water company must ensure its WRMP meets the requirements of the Habitats Regulations before implementation. The requirement for a Habitats Regulations Assessment (HRA) is established through Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, hereby referred to as the 'Habitats Directive', in Articles 6(3) and 6(4). The Habitats Directive is transposed into national legislation by the Conservation of Habitats and Species Regulations 2017 (as amended)[1], commonly referred to as the Habitats Regulations.

1.2 REQUIREMENT FOR HABITATS REGULATIONS ASSESSMENT

Under the UK Habitats Regulations, the responsibility for undertaking the HRA lies with Bristol Water as the "Competent Authority", or Plan making authority. This means that Bristol Water can make the judgements as to whether its plans or projects are likely to have significant effects on European sites[2], with advice from the Statutory Bodies, in particular, Natural England.

Under Regulations 63, any plan or project which is likely to have a significant effect on a European site (either alone or in-combination with other plans or projects) and is not directly connected with, or necessary for the management of the site, must be subject to a HRA to determine the implications for the site in view of its conservation objectives. In relation to the WRMP 2024 (WRMP24) the HRA needs to consider whether there are any likely significant effects (LSE) arising from construction or implementation activities and/or operation of any of the options considered in the WRMP24.

Regulation 63 of the Habitats Regulations essentially provides a test that the final plan must pass; there is no statutory requirement for HRA to be undertaken on draft plans or similar developmental stages. However, as with Strategic Environmental Assessment (SEA), it is accepted best-practice for the HRA of WRMPs to be run as an iterative process alongside plan development to ensure that potential effects on European sites[3,4] can be identified at an early stage and factored into the selection of options, as

[1] 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.

[2] 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 as a matter of Government policy (NPPF para. 181; TAN5 para. 5.1.3) 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, whereas the *Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019* uses the term 'National Site Network').

[3] 'European sites' include: 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 possible/potential SAC (pSAC). 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') apply; and to possible SACs (pSACs) and listed Ramsar Sites, to which the provisions of the Habitats Regulations are applied as a matter of Government policy (NPPF para. 176; TAN5 para. 5.2.2) when considering development proposals that may affect them. "European site" is therefore used in this report in its broadest sense, as an umbrella term for all of the above designated sites.

[4] The Conservation of Habitats and Species Regulations 2017 were amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 to reflect the UK's exit from the EU. These largely carried forward the provisions and terminology of the 2017 Regulations (so, for example, the term 'European site' is currently retained and for all practical purposes

shown in **Figure 1.1**. In practice, therefore, HRAs of WRMPs have two functions: they informally guide each water company as it determines which water resource options will be included in the published WRMP; and then subsequently provides a formal assessment of the preferred programme and published WRMP against Regulation 63.

The overall objective of the HRA is to establish whether options included in the WRMP24 are likely to have an adverse effect on European sites, alone or in-combination with other options in the plan, or with other plans and projects. Where LSE cannot be ruled out, adopting the precautionary principle, the objective is to determine through Stage 2 Appropriate Assessment whether the option will adversely affect the integrity of the European site(s). By considering HRA from the outset, the intention is to avoid, wherever possible, schemes being included in the WRMP24 that could lead to adverse effects on European sites.

1.3 CONSULTATION

Natural England and the Environment Agency were consulted on the proposed HRA methodology in March 2022. Natural England and the Environment Agency were also consulted on the SEA Scoping Report in March 2022. The comments received by stakeholders have been taken into account in preparing this HRA Report.

Public consultation on the dWRMP24 was completed between 28 November 2022 and 17 February 2023. Meetings were held with the Environment Agency and Natural England in April 2023, to discuss their representations on the dWRMP24 and how Bristol Water was proposing to address in the revised draft WRMP24 (rdWRMP24). A Statement of Response to the comments received during the consultation, and how they would be addressed in the Final WRMP24, was published in April 2023. A rdWRMP24 and updated supporting environmental assessments, including this HRA Report, was submitted to the regulators in April 2024. Bristol Water received permission to publish its plan as final in a letter from Defra dated 21 August 2024. This HRA Report supports the Final WRMP24 which will be published in October 2024.

1.4 STRUCTURE OF THE REPORT

The report is divided into the following sections:

Section 1: Introduction

Section 2: Methodology

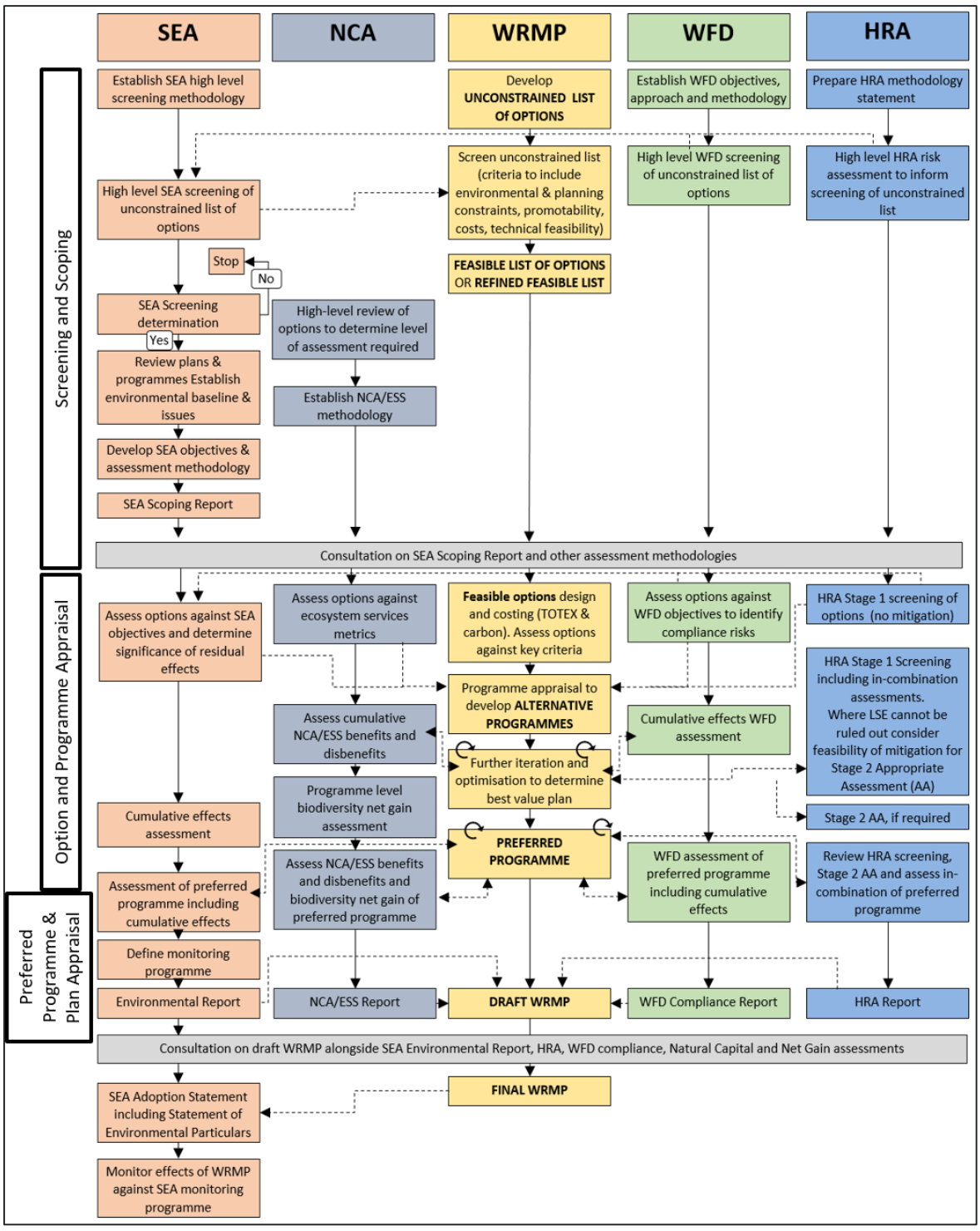
Section 3: Bristol Water's WRMP24

Section 4: HRA Stage 1 Screening

Section 5: Conclusions

the definition is essentially unchanged). However, the UK European sites are no longer legally part of the 'Natura 2000' network of protected sites, with this being replaced in the UK by the 'national site network' which comprises all existing SACs and SPAs and any new SACs and SPAs designated under the 2019 Regulations (Ramsar sites do not form part of the network). This also has relevance if compensation measures are required for an adverse effect (see Box 1), as the relevant metric is the overall coherence of the 'national site network'. The 2019 Regulations establish management objectives for the 'national site network' which contribute to the conservation of UK habitats and species that are also of pan-European importance, and to the achievement of their favourable conservation status within the UK.

Figure 1.1 Alignment of SEA, HRA, Water Framework Directive (WFD) and Natural Capital Assessments (NCA) to inform plan development



2. METHODOLGY

2.1 CONTEXT AND STAGES OF THE HRA PROCESS

The responsibility for undertaking the HRA lies with Bristol Water as the plan making authority.

Regulations 63 and 64 (if required) of *The Conservation of Habitats and Species Regulations (2017)* (the 'Habitats Regulations') transposed 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 related to plans or projects in England and Wales.

Regulation 63 of the Habitats Regulations states that if a plan or project is "(*a) is likely to have a significant effect on a European site or a European offshore marine site*[5] *(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 site unless the provisions of Regulation 64[6] are met.

An HRA determines whether there will be any 'likely significant effects' (LSE) on any European site as a result of a plan'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].

Guidance recognises four key steps in the HRA process as follows:

1. Stage 1 Screening – the identification of Likely Significant Effects (LSEs) of a plan or project on a European designated site either alone or in-combination. The test is a trigger for further assessment, and therefore the bar is set low i.e., is there a risk or possibility of an adverse effect. At this stage mitigation measures should not be taken into account, in accordance with the People over Wind (Court of Justice of the European Union (ECJ) Case C-323/17); this reinforces the idea of screening as a 'low bar' and makes 'appropriate assessments' more common.
2. Stage 2 Appropriate Assessment and the 'integrity test' – which involves closer examination of the project or plan and 'screened in' European designated sites to determine whether those sites will be subject to 'adverse effects on integrity'. The scope of such assessments is not set, and some may not be particularly detailed, especially where standard mitigation measures are available which are known to be effective. The level of assessment must be sufficient to ensure that there is no 'reasonable scientific doubt' that adverse effects on site integrity will not occur.
3. Stage 3 – Alternative Solutions – where adverse effects or uncertainty remain after the inclusion of mitigation in Stage 2, alternative ways where alternative solutions that meet the plan objectives are identified and consideration of their effects are given in comparison to those in the plan. A plan or project which has adverse effects on the integrity of a European site cannot be permitted if alternative solutions are available, except where the criteria for imperative reasons of overriding public interest are met (IROPI, see Stage 4).
4. Stage 4 Imperative Reasons of Overriding Public Interest – where there are no alternatives that have no or lesser effects on European sites, and the IROPI criteria are met, compensatory measures are developed and secured.

[5] '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.
[6] Considerations of overriding public interest.
[7] Also referred to as the 'test of significance'.
[8] Also referred to as the 'integrity test'.

2.2 GUIDANCE

The HRA has been undertaken in accordance with the key guidance document UKWIR (2021) *Environmental Assessment Guidance for Water Resources Management Plans and Drought Plans*. UK Water Industry Research Limited, London.

Other relevant guidance and case-practice has been considered as summarised below:

- Defra (2021). *Policy paper: Changes to the Habitats Regulations 2017* [online][9].
- UK Government (2019). *Appropriate assessment: Guidance on the use of Habitats Regulations Assessment* [online][10].
- Tyldesley, D. & Chapman, C. (2021). *The Habitats Regulations Assessment Handbook* [online]. DTA Publications Limited[11].
- UK Government (2021). Water resources planning guideline [online][12].
- Natural England (2020). *Guidance on how to use Natural England's Conservation Advice Packages in Environmental Assessments*. Natural England, Peterborough.
- European Commission (2018). *Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*. European Union, 1-86.
- Defra (2012). *The Habitats and Wild Birds Directives in England and its seas: Core guidance for developers, regulators & land/marine managers* [online][13].
- PINS Note 05/2018: *Consideration of avoidance and reduction measures in Habitats Regulations Assessment: People over* Wind, Peter Sweetman v Coillte Teoranta. [withdrawn].
- SNH (2019). SNH Guidance Note: *The handling of mitigation in Habitats Regulations Appraisal – the People Over Wind CJEU judgement* [online][14].

2.3 STAGE 1 SCREENING

For each WRMP24 option within the Feasible Options list, the assessment has considered whether there are any LSEs arising from construction and/or operation of the option (either alone or in-combination) on one or more European sites, including Special Protection Areas (SPAs) and Special Areas of Conservation (SACs), as well as internationally-designated Ramsar sites:

- SPAs are classified under the European Council Directive 'on the conservation of wild birds' (2009/147/EC; 'Birds Directive') for the protection of **wild birds and their habitats** (including particularly rare and vulnerable species listed in Annex 1 of the Birds Directive, and migratory species).
- SACs are designated under the Habitats Directive (92/43/EEC) and target particular **habitats** (Annex 1) **and/or species** (Annex II) identified as being of European importance.
- The Government also expects, as a matter of policy, potential SPAs (pSPAs), possible/proposed SACs (pSACs), compensation habitat and Ramsar sites to be included within the assessment.
- Ramsar sites support **internationally important wetland habitats** and are listed under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention, 1971).

[9]Available at: https://www.gov.uk/government/publications/changes-to-the-habitats-regulations-2017/changes-to-the-habitats-regulations-2017.

[10] Available at: https://www.gov.uk/guidance/appropriate-assessment.

[11] Available at: https://www.dtapublications.co.uk/handbook/.

[12]Available at: https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline.

[13]Available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/82706/habitats-simplify-guide-draft-20121211.pdf.

[14]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.

For ease of reference throughout the HRA process, these designations will be collectively referred to as “European sites”, despite Ramsar designations being made at the international level.

The HRA Stage 1 Screening process will identify whether each option (either alone or in combination with other plans or projects) is likely to have significant effects on European designated sites. The purpose of the screening stage is to determine whether any part of the plan is likely to have a significant effect on any European site (including areas of compensation habitat, areas of functional land, and the ability for abstractions to occur for the management of designated wetland sites). This is judged in terms of the implications of the plan for a site’s conservation objectives, which relate to its ‘qualifying features’ (i.e. those Annex I habitats, Annex II species, and Annex I bird populations for which it has been designated[15], and Ramsar criteria). Significantly, HRA is based on a rigorous application of the precautionary principle. Where uncertainty or doubt remains, an impact should be assumed, triggering the requirement for Appropriate Assessment of that scheme or plan.

The screening stage also has to conclude whether any in-combination effects would result from the various schemes within the plan itself, or from implementation of the plan in-combination with other plans and projects, and whether these would adversely affect the integrity of a European site.

2.3.1 Identifying European sites

The initial list of European sites for screening has been derived by adopting a distance-based threshold of 10km from each option component, plus exceptional, longer impact pathways. The use of a ‘10km threshold plus exceptional pathways’ approach is based on precedent set for previous HRAs of plans through consultation with statutory consultees and the Impact Risk Zone (IRZ) mapping provided by Natural England for screening of impacts to designated sites in England. It is based on the premise that most significant effects on qualifying species and habitats will occur within a maximum 10km radius of the source of impact, except where there are exceptional pathways such as major downstream or coastal dispersion effects, or larger foraging and dispersal distances for mobile species (e.g., bats, migratory fish).

In addition, the HRA Stage 1 Screening has identified any habitat outside the designated site that also supports the qualifying species populations that use the European site in question. This off-site ‘functionally linked land’ (or sea) is particularly relevant to mobile qualifying species (e.g., birds, bats, invertebrates, fish, otters). The precautionary principle applies equally to functionally linked land, so where there is insufficient information to ascertain that there would be no LSE, an Appropriate Assessment will be required. However, this does not mean that every possible parcel of land within reach of the European site’s qualifying populations must have been surveyed. The ‘Boggis’ case[16] establishes that there must be at least credible evidence that there could be a functional link between the location of option effects and the European site.

2.3.2 Sources of information

Data on the European sites and their interest features has been collected from the Joint Nature Conservation Committee (JNCC), and Natural England websites. These data include information on the attributes of the European sites that contribute to and define their integrity, current conservation status and the specific sensitivities of the site, notably the site boundaries and the boundaries of the component SSSIs; the conservation objectives; the condition, vulnerabilities and sensitivities of the sites and their interest features; the current pressures and threats for the sites; and the approximate locations of the interest features within each site (if reported); and designated or non-designated ‘functional habitats’ (if identified).

The following sources of published information were used:

- Site citations.
- Site Register Entries.
- Standard Data Form (SPA/SAC) or Information Sheet (Ramsar site).

[15] Annexes are contained within the relevant EC Directive.
[16] Boggis and Another v Natural England: Court of Appeal, 20 Oct 2009.

- Conservation Objectives and Supplementary Advice on Conservation Objectives (for SPAs/SACs[17]).
- Site Improvement Plans (SIPs).
- Core Management Plans (Wales).
- Regulation 33 information for European Marine Sites or Conservation Advice for Marine Protected Areas[18].
- Environment Agency Review of Consents information.
- SSSI Impact Risk Zones (in England), which apply equally to European sites.
- Site condition assessment has been integrated with SSSI assessments through Common Standards Monitoring (CSM) and marine condition assessments (for SAC marine features only).
- Definitions of Favourable Conservation Status (where available for species/habitat).
- Favourable Condition Tables are set out for every SSSI that underpins a European site and can often be applicable to the European site's qualifying features.
- Article 12 (SPA) and Article 17 (SAC) status reports.

2.3.3 Thresholds

The UKWIR (2021) guidance includes accepted 'zones of influence' for certain impacts, as repeated in **Table 2.1**, however the best and latest information should always be used to inform an assessment. Where possible, robust universal assumptions regarding the sensitivities of European site interest features will also be specified and applied at screening, for example:

- most breeding passerines will not be water-resource dependent.
- for groundwater sources and groundwater fed habitats, the EA consider that significant effects as a result of ground water abstractions are unlikely on European sites over 5km from the abstraction[19].
- wide-ranging marine / marine dependent species associated with marine sites that are not directly connected to the hydrological zone of influence are not typically considered to be both sensitive and exposed to the effects of the options (except in certain relatively unique circumstances, such as some desalination schemes).

Sites over 10km from the options that are not hydrologically linked and which do not support wide-ranging mobile species are considered sufficiently remote such that any environmental changes will be effectively nil, and so there will be 'no effects' on sites beyond this distance (and so no possibility of 'in combination' effects).

Table 2.1 Potential impacts of plan options[20] (Source: UKWIR, 2021)

Broad categories of potential impacts on European Sites, with examples	Examples of activities responsible for impacts *(example distance considerations in italics)*
Physical loss: • Removal • Smothering	Development of infrastructure associated with option, e.g., new or temporary pipelines, transport infrastructure, temporary weirs. Indirect effects from a reduction in flows e.g., drying out of water-margin habitat. *Physical loss is likely to be significant where the boundary of the option extends within or is directly adjacent to the boundary of the European Site, or within/adjacent to an offsite area of known foraging, roosting, breeding habitat (that supports species for*

[17] The conservation objectives for Ramsar sites are taken to be the same as for the corresponding SACs / SPAs (where sites overlap); SSSI Favourable Condition Tables will be used for those features not covered by SAC/SPA designations.
[18] Natural England & the Countryside Council for Wales' advice given under Regulation 33(2)(a) of the Conservation (Natural Habitats, &c.) Regulations 1994, as amended.
[19] National EA guidance: Habitats Directive Stage 2 Review: Water Resources Authorisations – Practical Advice for Agency Water Resources Staff.
[20] Note that the distances given in this table are illustrative only and should be defined for each Plan option on a case by case basis.

Broad categories of potential impacts on European Sites, with examples	Examples of activities responsible for impacts *(example distance considerations in italics)*
	which a European Site is designated, or where natural processes link the option to the site, such as through hydrological connectivity downstream of an option, long shore drift along the coast, or the option impacts the linking habitat).
Physical damage: • Sedimentation/silting • Prevention of natural processes • Habitat degradation • Erosion • Fragmentation • Severance/barrier effect • Edge effects	Construction activity leading to permanent and/or temporary damage of available habitat, sedimentation/siltation, fragmentation, etc. *Physical damage is likely to be significant where the boundary of the option extends within or is directly adjacent to the boundary of the European Site, or within/adjacent to an offsite area of known foraging, roosting, breeding habitat that supports species for which a European Site is designated, or where natural processes link the option to the site, such as through hydrological connectivity downstream of an option or sediment drift along the coast.*
Non-physical disturbance: • Noise • Visual presence • Human presence • Light pollution	Noise from temporary construction or temporary pumping activities. *Taking into consideration the noise level generated from general building activity (c. 122dB(A)) and considering the lowest noise level identified in appropriate guidance as likely to cause disturbance to estuarine bird species, it is concluded that noise impacts could be significant up to 1km from the boundary of the European Site*[21,22] Noise from vehicular traffic during operation of an option. *Noise from construction traffic is only likely to be significant where the transport route to and from the option is within 3-5km of the boundary of the European Site*[23]*.* Plant and personnel involved in in operation of the option. *These effects (noise, visual/human presence) are only likely to be significant where the boundary of the option extends within or is adjacent to the boundary of the European Site, or within/adjacent to an offsite area of known foraging, roosting, breeding habitat (that supports species for which a European Site is designated).* Options that might include artificial lighting, e.g., for security around a temporary pumping station. *Effects from light pollution*[24] *are more likely to be significant where the boundary of the option is within 500m of the boundary of the European Site.*
Water table/availability: • Drying • Flooding/stormwater • Changes to surface water levels and flows • Changes in groundwater levels and flows • Changes to coastal water movement	Changes to water levels and flows due to increased water abstraction, reduced storage or reduced flow releases from reservoirs to river systems. Potential for changes to habitat availability, for example reductions in wetted width of rivers leading to desiccation of macrophyte beds. *These effects are only likely to be significant where the boundary of the option extends within the same ground or surface water catchment as the European Site. However, these effects are dependent on hydrological continuity between the option and the European Site, and sometimes whether the option is up or down stream from the European Site.*

[21] Environment Agency (2013) Bird Disturbance from Flood and Coastal Risk Management Construction Activities. Overarching Interpretive Summary Report. Prepared by Cascade Consulting and Institute of Estuarine and Coastal Studies.
[22] Cutts N, Hemingway K and Spencer J (2013) The Waterbird Disturbance Mitigation Toolkit Informing Estuarine Planning and Construction Projects. Produced by the Institute of Estuarine and Coastal Studies (IECS). Version 3.2.
[23] British Standards Institute (BSI) (2009) BS5228 - Noise and Vibration Control on Construction and Open Sites. BSI, London.
[24] Institute of Lighting Professionals (2020) Guidance Notes for the Reduction of Obtrusive Light GN01/20.

Broad categories of potential impacts on European Sites, with examples	Examples of activities responsible for impacts *(example distance considerations in italics)*
Toxic contamination: • Water pollution • Soil contamination • Air Pollution	Reduced dilution in downstream or receiving waterbodies due to changes in abstraction or reduced compensation flow releases to river systems. *These effects are only likely to be significant where the boundary of the option extends within the same ground or surface water catchment as the European Site. However, these effects are dependent on hydrological continuity between the option and the European Site, and sometimes whether the option is up or down stream from the European Site.* Air emissions associated with plant and vehicular traffic during construction and operation of options. *The effect of dust is only likely to be significant where site is within or in close proximity to the boundary of the European Site*[25,26]*. Without mitigation, dust and dirt from the construction site may be transported onto the public road network and then deposited/spread by vehicles on roads up to 500m from large sites, 200m from medium sites, and 50m from small sites as measured from the site exit.* *Effects of road traffic emissions from the transport route to be taken by the project traffic are only likely to be significant where the protected site falls within 200 metres of the edge of a road affected*[27]*.*
Non-toxic contamination: • Nutrient enrichment (e.g., of soils and water) • Algal blooms • Changes in salinity • Changes in thermal regime • Changes in turbidity • Changes in sedimentation/silting	Changes to water salinity, nutrient levels, turbidity, thermal regime due to increased water abstraction, discharges, storage, or reduced compensation flow releases to river systems. *These effects are only likely to be significant where the boundary of the option extends within the same ground or surface water catchment as the European Site. However, these effects are dependent on hydrological continuity between the option and the European Site, and sometimes whether the option is up or down stream from the European Site.*
Biological disturbance: • Direct mortality • Changes to habitat availability • Out-competition by non-native species • Selective extraction of species • Introduction of disease • Rapid population fluctuations • Natural succession	Killing or injury due to construction activity. *Likely to be a risk where the boundary of the option extends within or is directly adjacent to the boundary of the European Site, or within/adjacent to an offsite area of known foraging, roosting, breeding habitat (that supports species for which a European Site is designated).* Creation of new pathway for spread of non-native invasive species. *This effect is only likely to be significant where the option is situated within the European Site or an upstream tributary of the European Site, but also for inter-catchment water transfers.*

2.3.4 Assessment

The draft HRA Stage 1 Screening has been completed for the feasible options alone and is provided in **Appendix 1**. As stated in Section 2, the process will be reiterated for the preferred and alternative programmes to fulfil the formal Stage 1 Screening stage. The current assessments are to help inform Bristol Water's selection of constrained options and identify options that will require further assessment work if taken forward into the constrained list.

[25] Highways Agency (2003) Design Manual for Roads and Bridges (DMRB), Volume 11.
[26] Institute of Air Quality Management (2014) Guidance on the assessment of dust from demolition and construction v1.1.
[27] NE Internal Guidance – Approach to Advising Competent Authorities on Road Traffic Emissions and HRAs V1.4 Final - June 2018.

The review of the feasible options does not include a detailed assessment of the possible 'in combination' effects, either between options or with other plans, projects or programmes. This is due to the number of options and the level of detail provided on them; an indication is provided only.

2.4 STAGE 2 APPROPRIATE ASSESSMENT

Where required, the 'appropriate assessments' are an extension of the assessment processes undertaken at the screening stage, with significant effects examined to determine whether there will be any adverse effects on the integrity of any European sites, taking into account the conservation objectives.

The appropriate assessments are 'appropriate' to the nature of the WRMP as a strategic plan, the option under consideration, and the scale and likelihood of any effects; for example, exhaustive examination of feature sensitivities and possible effect pathways is not undertaken for options that would have previously been 'screened out with mitigation' if there is a high degree of confidence in the mitigation measures. The assessments include inter-option 'in combination' assessments.

2.5 REVIEW OF POTENTIAL IN-COMBINATION EFFECTS

HRA requires that the effects of other projects, plans or programmes be considered for effects on European sites 'in combination' with the WRMP. There is limited guidance on the precise scope of 'in combination' assessments for strategies, particularly with respect to the levels within the planning hierarchy at which 'in combination' effects should be considered. The 'two-tier' nature of the WRMP (i.e. a plan with specific schemes) also complicates this assessment.

Broadly, it is considered that the WRMP could have the following in combination effects:

- Within-plan effects, i.e. separate options within the WRMP affecting the same European site(s); these are addressed as part of the option assessment process outlined above.
- Between-plan abstraction effects, i.e. effects with other abstractions, in association with or driven by other plans (for example, other water company WRMPs).
- Other between-plan effects, i.e. 'in combination' with non-abstraction activities promoted by other plans – for example, with flood risk management plans.
- Between-project effects, i.e. effects of a specific option with other specific projects and developments.

In undertaking the 'in combination' assessment it is important to note the following:

- The WRMP development process explicitly accounts for land-use plans, growth forecasts and population projections when determining future treatment and water management requirements.
- The detailed examination of non-water company consents for 'in combination' effects can only be undertaken by the Environment Agency (or Natural Resources Wales) through their permitting procedures.
- Known major projects are also taken into account during the development of the dWRMPs.

In accordance with the legislation, the following approach will be adopted for the in-combination assessment:

- *STEP 1 – Does the Scheme have no discernible effect, whatsoever, on the European site? If not, then there's no need for in-combination assessment, as logic dictates it can't have in-combination effects.*
- *STEP 2 - Does the Scheme, alone, have an adverse effect on the European site? If so, then there's no need for in-combination assessment as consent cannot be given unless the HRA Stages 3 and 4 derogation tests are met, in which case all residual effects of the scheme acting alone will be compensated for.*
- *STEP 3 – Does this Scheme have a discernible effect, but one which is not 'significant' in the context of the Habitats Regulations (i.e. adverse effect on site integrity) alone? If so, then an in-combination assessment is required.*
- *STEP 4 – Identify the other Plans/Projects that also have discernible effects that (1) aren't an adverse effect alone but (2) might act in combination with effects of your Project. It is normal*

practice to agree this list of potential in-combination Plans/Projects with the Competent Authority before doing the assessment.

- *STEP 5 – Assess these other Plans/Projects in combination with this Project.*

With regard to other strategic plans, the list of plans included within the SEA is used as the basis for a high-level 'in combination' assessment. Potential 'in combination' effects between individual options and Nationally Significant Infrastructure Projects (NSIPs) identified by The Planning Inspectorate, and other known major projects, are also assessed.

3. BRISTOL WATER'S WRMP 2024

3.1 INTRODUCTION

This section provides an overview of the Water Resources Management Planning process, the Bristol Water supply system and Bristol Water's WRMP24. The Bristol Water supply area is shown in **Figure 3.1** (see Section 4 for the relevant study area).

Water Resources Management Planning is undertaken by all water companies in England and Wales in order to ensure reliable, resilient water supplies over the long-term planning horizon. The process includes determining and forecasting how much water customers will need over the planning period (assessing demand) and how best to provide it (assessing supply, either by attempting to manage demand, or create new supply) in an efficient, timely manner (programme appraisal). Companies seek to identify the preferred, 'best value' programme of demand management and water supply options to maintain a balance between reliable supply and demand in each WRZ[28] and for their supply area as a whole.

Water companies in England and Wales have a statutory requirement to prepare a WRMP every five years; the next WRMP must be submitted in draft to the Secretary of State by October 2022. The WRMP also informs the regulatory water company business planning 'Periodic Review' process through which the Water Services Regulation Authority (Ofwat) sets the prices that water companies can charge their customers for water (and wastewater) services. The next periodic review will be in 2024.

Engagement with government, regulators, other licensed water suppliers and water companies, customers and a wide range of stakeholders is key to the WRMP process. Bristol Water's WRMP24 pre-consultation programme commenced in January 2022. Consultation includes a wide range of stakeholders and the regulators. Consultation will continue throughout the next two years as the WRMP continues to be developed. The dWRMP24 was published for formal public consultation in November 2022, accompanied by the SEA Environmental Report.

Following comments on the dWRMP24, a Statement of Response has been prepared by Bristol Water setting out how it intends to take account of the comments received in finalising the WRMP for the Secretary of State's approval.

In developing its WRMP24, Bristol Water examines the supply / demand balance for its sole WRZ[28] and determines how any deficit between forecast demand and reliable water supply availability should be addressed for the appropriate planning period. This is influenced by government policy, expectations and targets for example regarding leakage reduction and demand (per capita consumption levels).

Bristol Water have identified feasible options from an unconstrained list which are being investigated further. The feasible list is a set of options that Bristol Water consider are suitable to be taken forward for assessment as part of the process for defining the preferred programme of options required to meet any supply demand deficit.

Each of these options is assessed to understand the costs, the benefits to the supply-demand balance, the effect on carbon emissions and the environmental and social effects (through the SEA process and associated HRA, WFD, NCA, Biodiversity Net Gain (BNG) and Invasive Non-Native Species (INNS) assessments). The options are subsequently compared through comprehensive programme appraisal process to determine the 'best value' programme of options to maintain a supply-demand balance over the planning period for the WRZ. Decisions on the best value programme will take account of a range of factors, such as the implications for water bills, the resilience to future risks and uncertainties (e.g. climate change), deliverability considerations and the environmental and social effects of the programme (adverse and beneficial, as informed by the SEA).

[28] The entirety of Bristol Water's supply area falls within one Water Resource Zone (WRZ). This is not the case for water companies that serve areas that are geographically larger.

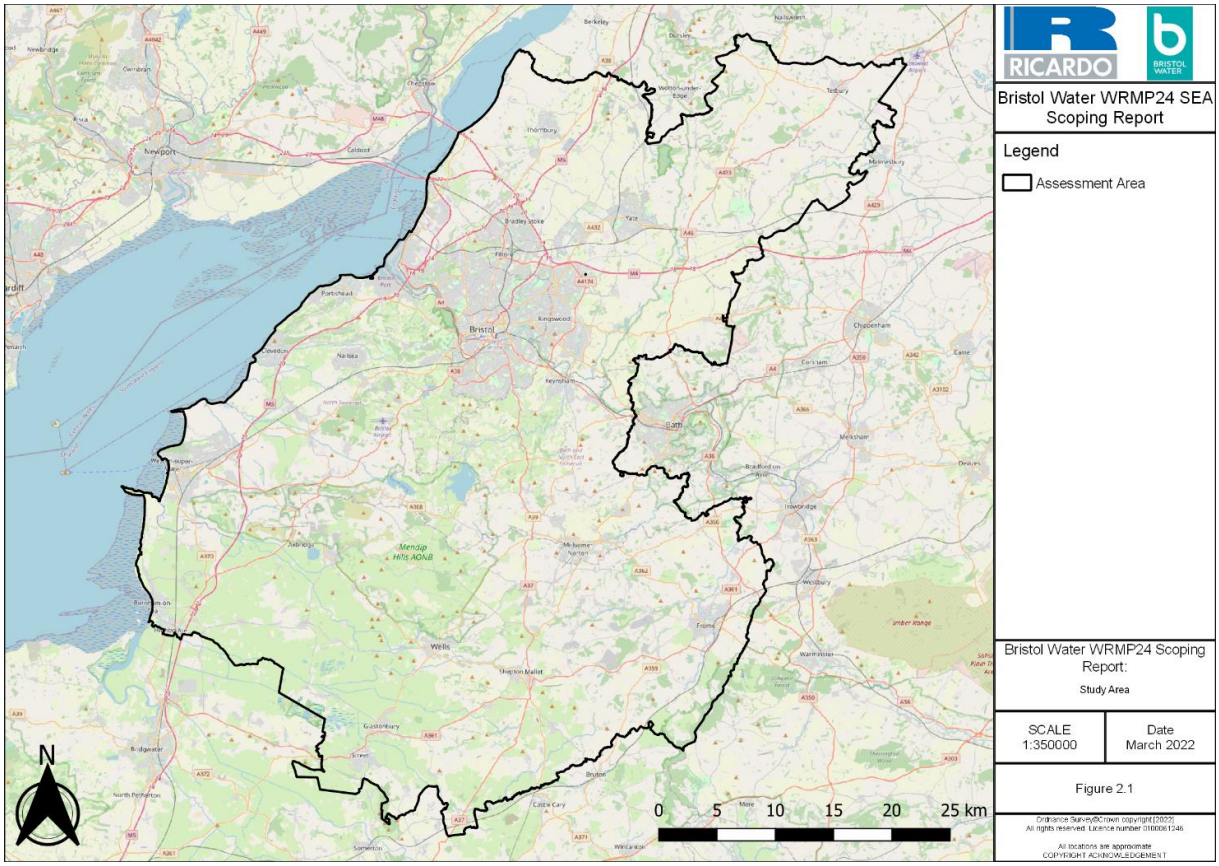
3.2 BRISTOL WATER'S SUPPLY AND RESOURCE SYSTEM

Bristol Water is a water-only company that provides water supplies to 1.23 million people and all the associated businesses in an area of approximately 2,500km^2 centred on Bristol and the towns and villages within approximately a 30km radius of the city. The water supply area stretches from Thornbury and Tetbury in the north, to Street and Glastonbury in the south, and from Weston-Super-Mare in the west to Frome in the east. Bristol Water relies upon various water sources, including reservoirs, rivers, springs, well and boreholes. Reservoir and river sources each supply between 35% and 50% of the company's total water supply.

Water resources within the Bristol Water supply area alone are not sufficient to meet customer demand for water and therefore water supplies are also imported from neighbouring areas, including the River Severn. This is sourced from the Gloucester & Sharpness Canal to supply the largest northern treatment works. This source accounts for approximately 46% of Bristol Water's licensed resources. Bristol Water has an agreement with the Canal & Rivers Trust (the owners of the abstraction licence) to receive water supplies from the Gloucester & Sharpness Canal, which is supplied by the River Severn and other local rivers, the Cam and the Frome. The volume of water available for abstraction from the River Severn is controlled by the Environment Agency according to the River Severn Regulation System operating rules. The Mendip Reservoirs and associated surface water abstractions account for approximately 42% of the available licensed water resource. The remaining 12% of licensed water resources for Bristol Water are derived from groundwater.

There is a significant degree of resilience and connectivity in both the raw water network and the treated water bulk transfer systems. This flexibility permits the sharing of resources and allows optimum use according to seasonable availability. As a result, the Bristol Water supply area is operated as a single WRZ in which all sources are used conjunctively. Bristol Water's supply area is bounded by three other water companies (Thames Water, Wessex Water and Severn Trent Water). A number of water supply transfers are made between Bristol Water and Wessex Water.

Figure 3.1 Bristol Water WRMP24 Environmental supply area



3.3 BRISTOL WATER'S WATER RESOURCE MANAGEMENT PLAN 2024

There are several key future challenges faced by Bristol Water in providing a reliable and sustainable water supply over the next 25 years. These include potential effects of climate change, risks of raw water quality deterioration and measures to improve the environment and / or help watercourses achieve good ecological status or potential under the Water Framework Directive.

As a result of these various pressures action will be required to ensure that sustainable and secure supplies to customers continue to be maintained over the 25-year planning horizon. Full details are provided in the WRMP24 . It is also noted the WRMP24 needs to deliver leakage levels as indicated in the Public Interest Commitment (PIC) to 2030 and National Infrastructure Commission's (NIC) challenge to 2050; and to reduce per capita consumption (PCC) to 110 litres per head per day by 2050 as outlined by the National Framework for Water Resources[29]. Full details are provided in the WRMP24.

The temporal scope of the plan covers a period of 55 years to 2080 rather than being limited to the statutory planning period of 25 years. However, as WRMPs are required to be updated every five years, the options and programmes for balancing supply and distribution will be reviewed and subject to SEA, HRA and WFD assessment again during the period 2029/30.

3.3.1 Bristol Water's Constrained Options List

Bristol Water investigated an unconstrained list of potential options to balance future supply and demand. Unconstrained options include all options that could technically be used to meet the deficit. To identify which of the options included in the unconstrained list should be investigated further, Bristol Water reviewed the technical, environmental, carbon and social attributes of each option at a high level. This resulted in a sub-set of the unconstrained list of options, which is referred to as the "feasible" list.

[29] National_Framework_for_water_resources_summary.pdf (publishing.service.gov.uk)

The feasible options were subsequently further appraised by Bristol Water resulting in a final constrained list of options. The constrained list is a set of options that Bristol Water consider are suitable to be taken forward for assessment as part of the process for defining the preferred programme of options required to meet any supply demand deficit. Options on the constrained list fall into the following categories:

- Customer Demand – Options which aim to encourage customers to reduce their water usage;
- Distribution Management – Options which aim to improve the way in which water is moved around, reducing leakage;
- Production Management – Options which improves the output of existing sources;
- Resource Management – Options which increase the supply of water.

The WRMP24 consultation process led to the development and/or refinement of a number of options following publication of the dWRMP, summarised as:

- Leakage options: The costs and effectiveness of the components of the leakage scenarios tested were reviewed in the context of consultation feedback and in conjunction with similar options being tested by South West Water. This resulted in three new leakage scenario optimisation runs being evaluated:
- A further four demand management options have been developed and added to the feasible list that have been developed in conjunction with South West Water.
- Metering: In response to the consultation responses Bristol Water received from Ofwat, Arqiva and Consumer Council for Water (CCW) and in collaboration with South West Water, the focus is now on AMI meters. This has resulted in a reduction in the total number of demand management options.
- Supply options - Cheddar 2 reservoir: there is not the need, in Bristol Water's supply area, for an additional reservoir at the present time. As a result the option has been removed from Bristol Water's feasible options list. However, this option has been selected as a preferred option within the West Country Water Resource Group (WCWRG) regional plan and is being developed within Bristol Water's supply area to serve the wider region as part of the Regulators' Alliance for Progressing Infrastructure Development (RAPID) gated process.

Further information on these changes is provided in Section 12.7 of the WRMP24.

These are documented in **Table 3.1**, **Table 3.2** and **Table 3.3** below.

Table 3.1 Constrained List of Bristol Water WRMP24 Options – Supply-side options

ID	Option Name/Brief	Option Category	Maximum Resource Value
P01-01	Charterhouse – Increase performance of existing sources to increase DO near to licenced quality	Resource Management (Water treatment works (WTW) capacity increase)	0.74Ml/d
P01-02	Forum – Increase performance of existing sources to increase DO near to licenced quality	Resource Management (WTW capacity increase)	1.59Ml/d
P06	Catchment Management of the Mendip Lakes (Chew, Blagdon and Cheddar) to manage outage risk from algal blooms	Resource Management (Catchment management)	0.7Ml/d
P08	Alderley WTW – Increase performance of existing sources (Alderley WTW) to increase DO	Resource Management (WTW capacity increase)	7.00Ml/d

ID	Option Name/Brief	Option Category	Maximum Resource Value
R005	Cheddar 2 Reservoir[30]	Resource Management (New Reservoir)	13.5Ml/d
R007	Pumped Refill of Chew Valley Reservoir	Resource Management (Reservoir enlargement)	25Ml/d
R08-02	Bathford – New water sources within Bristol Water CAMS area for the location Middle River Avon at Bathford	Resource Management (New surface water)	1.4Ml/d
R08-03	Frome at Frenchay - New water sources within Bristol Water CAMS area for the location Bristol Frome at Frenchay	Resource Management (New surface water)	1.1Ml/d
R014	Avonmouth WwTW Direct Effluent Reuse	Resource Management (Water reuse)	10Ml/d
R016	Huntspill Transfer	Resource Management (Internal raw water transfer)	20Ml/d
R24	Honeyhurst – Bring Honeyhurst source back into supply	Resource Management (New groundwater)	2.4Ml/d

Table 3.2 Constrained List of Bristol Water WRMP24 Options - Demand Management Options

ID	Option Name/Brief	Savings in Demand upon full implementation
HH_M_009 (AMI) (15) (Baseline)	Progressive AMI smart metering & Watersmart (15 year) (Baseline)	4.01
HH_M_009 (AMI) (15) (Enhancement)	Progressive AMI smart metering & Watersmart (15 year)	13.84
HH_A_001	Home efficiency visits (HEV) - Targeted water efficiency audit with free water efficient device installation - In person.	14.32
HH_A_002	Home efficiency visits (HEV) - water efficiency audit with free water efficient device installation - metered	5.42
HH_A_003	Home efficiency visits (HEV) - water efficiency audit with free water efficient device installation - New meter	13.78
HH_A_004	Virtual Home efficiency visits (VHEV) - water efficiency audit with free water efficient devices	5.33
HH_E_001	Appliance subsidies (rebates for water efficient devices and appliances)	0.86
HH_E_002	Pay per use appliances (e.g. Miele bundles subscription)	0.11
HH_E_004	Leaky Loos' Wastage Fix: large scale targeted fixes	3.41
HH_E_005	Eco branding water efficiency programme	1.18
HH_E_006	Distribution of household water efficiency kits for self-installation - via the water company of WCWR website.	4.27

[30] Since the Draft WRMP24, it has been shown that there is not the need, in Bristol Water's supply area for an additional reservoir at the present time and as a result the option has been removed from Bristol Water's feasible options list. However, this option has been selected as a preferred option within the WCWR regional plan and is being developed within Bristol Water's supply area to serve the wider region as part of the RAPID gated process. Information concerning the Cheddar 2 option as assessed at the Draft WRMP24 stage has been retained in this report for reference.

ID	Option Name/Brief	Savings in Demand upon full implementation
HH_E_008	Partnerships/targeting of large/small developers to install water efficient devices	5.88
HH_E_009	Home Efficiency Visits (HEVs) - water efficiency audit - local authorities, housing associations, corporate landlords)	1.01
HH_E_010	Home Efficiency Visits (HEVs) - water efficiency audit - combined with energy efficiency audits	7.62
HH_E_013	School visits water efficiency programme	0.06
HH_E_016	Media campaigns to influence water use	2.37
HH_I_001	Targeted incentives scheme - Individual customer/community reward (e.g. Greenredeem) - New metered customers	6.17
HH_I_004	Community competition	0.07
HH_T_006	Community reward tariff	-
HH_T_008	Individual reward tariff	-
HH_N_002	Home retrofit of rainwater harvesting	0.56
HH_N_003	Rainshare - Communities direct harvested rainwater into a centralised shared resource	0.38
HH_N_004	Grey water recycling retrofitting to existing properties.	1.15
C019	Water Butts (Bristol Water subsidy)	0.40
HH_P_001	Change WC standards	4.77
HH_P_002	Water labelling - with minimum standards	51.93
HH_P_003	Water labelling - with no minimum standards	21.50
HH_P_004	New development standards - water neutrality	2.60
HH_P_005	New home standards - mandatory	12.98
HH_W_001	Resource West campaign	0.15
NHH_A_001	Business Efficiency Visits (BEV) - water efficiency audit - in person audit, fix and retrofit, targeted at specific sectors/businesses	0.53
NHH_A_003 & NHH_A_006	Business Efficiency Visits (HEV) - leakage detection - in person targeted at specific sectors/businesses	0.64
NHH_E_001	Sector specific water efficiency advice e.g. partnerships with holiday rental companies Airbnb.	0.01
NHH_E_002 (AMI)	Progressive AMI smart metering & Watersmart (25 year)	0.71
NHH_I_001	Rewards to water retailers for business water use savings.	0.18
NHH_T_003	Benchmarked rising block business tariffs	0.06
NHH_N_001	Rainwater harvesting is included in new developments to meet planning conditions - commercial/public sector developments - single or multiple	0.02
NHH_N_002	Rainwater harvesting feasibility assessment and/or subsidised installation - target large water users	0.18
NHH_N_003	Rainwater harvesting - target large water users	0.33
C016	Water saving devices - waterless urinals	1.03
HH_A_005	Home efficiency visits (HEV) - HEV/retrofit visits during flow regulator installation visit.	0.00
HH_E_020	Communication and awareness campaign	0.02
HH_E_021	Innovative water saving devices 1 – Installation of flow regulators in supply pipes	8.98

ID	Option Name/Brief	Savings in Demand upon full implementation
HH_E_022	Innovative water saving devices 2 – Installation of flow regulators with meter installation	21.63
HH_E_023	Innovative water saving devices 3 - Combining installation with home efficiency visits	0.03

Table 3.3 Constrained List of Bristol Water WRMP24 Options - Leakage Reduction

ID	Option Name/Brief
D001	Pressure reduction
D002	Mains infrastructure replacement
D003	Communication pipe replacement
D004	Communication pipe and subsidised supply pipe replacement
D005	Leak-stop enhanced
D006	Active leakage control increase
D007	Enhanced permanent zonal monitoring (includes permanent noise loggers, district meters etc.)
D008	Lift and shift loggers
D009	Customer side leakage reduction through smart metering
D010	Innovation fund

These leakage reduction options were optimised separately by Bristol Water to assist in developing an intelligent pathway for delivering the reduction requirements set out by public interest commitments (PIC) to 2030, the Environmental Improvement Plan (EIP) to 2038 and National Infrastructure Commissions (NIC) 50% reduction challenge to 2050. The outcome of this work was a range of leakage reduction scenarios. The resulting leakage scenario options (which comprise the leakage reduction activities shown in **Table 3.3**) are provided below:

- No reduction
- Linear reduction to 50% by 2050
- Linear reduction to 50% by 2045

These were also developed to be consistent with the activities of the WCWRG. Further information on the development of the leakage options is provided in Section 12.7.1 of the WRMP24.

3.3.2 Cheddar Reservoir Strategic Resource Option

A new reservoir at Cheddar was historically an option for additional resource to serve the Bristol Water area directly. During AMP5 the reservoir obtained outline planning permission, with a high level of approval and engagement from local stakeholders. However, a shift in focus for the company over recent years, to managing leakage and customer demand, means there is no need for supply options for Bristol Water customers at the present time. This additional reservoir has however been selected as a preferred supply option within the WCWR regional plan following further analysis including the 2022 drought. As the reservoir does not provide a dry year benefit to Bristol Water customers, it has been removed from the feasible option list (since the dWRMP), however it will be developed within Bristol Water's supply area to serve the wider region as part of the RAPID gated process.

The additional resource and improved connectivity of the region will boost resilience in the whole of the southwest. However, the need for the new supply comes from the rest of the region, not Bristol Water. As a result, Cheddar 2 reservoir is no longer a supply option for Bristol Water.

4. HRA STAGE 1 SCREENING

4.1 EXISTING LICENCES

The WRMP24 sets out Bristol Water's long-term strategy for maintaining reliable and resilient water supplies to its customers. The strategy includes the use of existing water resources to meet demand as well as existing demand management measures to ensure sufficient supply under current baseline conditions.

The Environment Agency Review of Consents (RoC) process, undertaken in the early 2000s, considered Bristol Water's existing water source abstraction licences (at the abstraction licence limit) and the potential for adverse effects on European sites. Where adverse effects were identified, recommendations were made to change abstraction licences. Since the RoC process was completed, there have been changes to the baseline, conservation objectives and/or Supplementary Advice to Conservation Objectives, and site condition, which may require the original RoC conclusions to be revisited.

As part of the WRMP process, licences are identified between the water company and Environment Agency that are determined as valid for the planning period, or identified as requiring sustainability reductions. This informs the baseline, and provides an opportunity to flag any other licences considered to be at risk.

Bristol Water have engaged with both the Environment Agency and Natural England to explore the risks and issues associated with the existing licences. These risks and issues have been developed into the PR24 WINEP investigations programme. This includes a programme of Environmental Destination investigations across all Bristol Water sources and catchments to understand the potential impacts on water availability in the face of growth and climate change over the longer term. A programme of WFD investigations around existing licences is also proposed, and discussions are ongoing with the Environment Agency as to any additional licences to be included in the investigations where there is an impact pathway to a designated site. The conclusions of these investigations will allow for any licence modifications to be made. For WRMP24 no changes to the Preferred Plan have been identified, with the next WRMP cycles available to accommodate any changes arising because of licence modifications.

4.2 POTENTIAL LIKELY SIGNIFICANT EFFECTS OF BULK SUPPLIES AND TRANSFERS TO OTHER WATER COMPANIES

As part of Wessex Water's dWRMP24, the company is reliant on the import of water from Bristol Water's supply zone. The transfer to Wessex Water (option 18.26/28) is an existing transfer (Newton Meadows) with a change in operational regime to provide Wessex Water during the peak demand period. No infrastructure works are required on Bristol Water's part, and therefore no LSEs to European sites have been identified .

No further donor or bulk transfer schemes are understood to have been selected by other water companies which would require an assessment by Bristol Water.

4.3 POTENTIAL LIKELY SIGNIFICANT EFFECTS OF WRMP24 FEASIBLE OPTIONS

The approach to HRA Stage 1 Screening is described above in Section 2 above. The Bristol Water supply area is associated with a number of European sites as shown on **Figure 4.1**.

The HRA Stage 1 Screening of demand management options for the WRMP24 is provided in **Table 4.1** and for potential water supply options in **Table 4.2**. Where uncertainty has been identified, this uncertainty indicates that a confident conclusion of no LSE is not yet possible. Where uncertainty remains, a Stage 2 Appropriate Assessment would be required to either confirm no adverse effect related to a scheme or to confirm an adverse effect and any appropriate mitigation measures. The

WRMP24 does not include any options that were identified as 'uncertain' in respect of LSE on any European site.

Table 4.1 Screening of demand management options for LSEs on European sites

Option No.	Option Name	HRA Outcome
HH_M_009 (AMI) (15) (Enhancement)	Progressive AMI smart metering & Watersmart (15 year)	No LSEs
HH_A_001	Home efficiency visits (HEV) - Targeted water efficiency audit with free water efficient device installation - In person.	No LSEs
HH_A_002	Home efficiency visits (HEV) - water efficiency audit with free water efficient device installation - metered	No LSEs
HH_A_003	Home efficiency visits (HEV) - water efficiency audit with free water efficient device installation - New meter	No LSEs
HH_A_004	Virtual Home efficiency visits (VHEV) - water efficiency audit with free water efficient devices	No LSEs
HH_E_001	Appliance subsidies (rebates for water efficient devices and appliances)	No LSEs
HH_E_002	Pay per use appliances (e.g. Miele bundles subscription)	No LSEs
HH_E_004	Leaky Loos' Wastage Fix: large scale targeted fixes	No LSEs
HH_E_005	Eco branding water efficiency programme	No LSEs
HH_E_006	Distribution of household water efficiency kits for self-installation - via the water company of WCWR website.	No LSEs
HH_E_008	Partnerships/targeting of large/small developers to install water efficient devices	No LSEs
HH_E_009	Home Efficiency Visits (HEVs) - water efficiency audit - local authorities, housing associations, corporate landlords)	No LSEs
HH_E_010	Home Efficiency Visits (HEVs) - water efficiency audit - combined with energy efficiency audits	No LSEs
HH_E_013	School visits water efficiency programme	No LSEs
HH_E_016	Media campaigns to influence water use	No LSEs
HH_I_001	Targeted incentives scheme - Individual customer/community reward (e.g. Greenredeem) - New metered customers	No LSEs
HH_I_004	Community competition	No LSEs
HH_T_006	Community reward tariff	No LSEs
HH_T_008	Individual reward tariff	No LSEs
HH_N_002	Home retrofit of rainwater harvesting	No LSEs
HH_N_003	Rainshare - Communities direct harvested rainwater into a centralised shared resource	No LSEs
HH_N_004	Grey water recycling retrofitting to existing properties.	No LSEs
C019	Water Butts (Bristol Water subsidy)	No LSEs
HH_P_001	Change WC standards	No LSEs
HH_P_002	Water labelling - with minimum standards	No LSEs
HH_P_003	Water labelling - with no minimum standards	No LSEs
HH_P_004	New development standards - water neutrality	No LSEs
HH_P_005	New home standards - mandatory	No LSEs
HH_W_001	Resource West campaign	No LSEs
NHH_A_001	Business Efficiency Visits (BEV) - water efficiency audit - in person audit, fix and retrofit, targeted at specific sectors/businesses	No LSEs
NHH_A_003 & NHH_A_006	Business Efficiency Visits (HEV) - leakage detection - in person targeted at specific sectors/businesses	No LSEs
NHH_E_001	Sector specific water efficiency advice e.g. partnerships with holiday rental companies Airbnb.	No LSEs
NHH_E_002 (AMI)	Progressive AMI smart metering & Watersmart (25 year)	No LSEs

Option No.	Option Name	HRA Outcome
NHH_I_001	Rewards to water retailers for business water use savings.	No LSEs
NHH_T_003	Benchmarked rising block business tariffs	No LSEs
NHH_N_001	Rainwater harvesting is included in new developments to meet planning conditions - commercial/public sector developments -single or multiple	No LSEs
NHH_N_002	Rainwater harvesting feasibility assessment and/or subsidised installation - target large water users	No LSEs
NHH_N_003	Rainwater harvesting - target large water users	No LSEs
C016	Water saving devices - waterless urinals	No LSEs
HH_A_005	Home efficiency visits (HEV) - HEV/retrofit visits during flow regulator installation visit.	No LSEs
HH_E_020	Communication and awareness campaign	No LSEs
HH_E_021	Innovative water saving devices 1 – Installation of flow regulators in supply pipes	No LSEs[31]
HH_E_022	Innovative water saving devices 2 – Installation of flow regulators with meter installation	No LSEs
HH_E_023	Innovative water saving devices 3 - Combining installation with home efficiency visits	No LSEs
130 01 No reduction (D001-D010)	No leakage reduction	No LSEs
131 03 Linear 50 2050 (D001-D010)	Leakage reduction: Linear reduction to 50% by 2050	No LSEs
138 03 Linear 50 2045 (D001-D010)	Leakage reduction: Linear reduction to 50% by 2050	No LSEs

[31] Although the locations of the supply pipes are unknown and could in theory be in proximity to European sites, the works required are very minor, and best practice construction methods and pollution prevention measures would be sufficient to avoid adverse effects.

Table 4.2 Screening of constrained list of water supply side options for LSEs on European sites[32]

Option No.	Option Name	European site	Proximity (km)	HRA Outcome	Comments
P01_01	**Charterhouse** This option would improve the output of existing sources utilising the Lower Springs by providing new pumps to the Charterhouse WTW site and extending the treatment processes at the site so that the full licensed volume can be treated and put into supply. This would take the scheme from the 2Ml/d under the current project up to 2.74Ml/d, the licensed quantity.	Mendip Limestone Grasslands SAC	5.1km	Yes – LSE	**Construction** LSE identified during construction on greater horseshoe bat *Rhinolophus ferrumequinum* given proximity of nearby woodland habitat and foraging range of species. Mitigation measures required during construction, therefore Stage 2 Appropriate Assessment required if option selected.
		Mendip Woodlands SAC	2.9km	No LSE	Sufficient distance such that air quality issues during construction not anticipated on qualifying habitats. Habitat not water dependent therefore no LSEs during operation anticipated.
		North Somerset and Mendip Bats SAC	Adjacent	Yes – LSEs	**Construction** Given the immediate proximity of the scheme to the European site, although the works are small scale, option P01_01 is considered likely to result in impacts during construction works through loss/damage to supporting habitats (if present), air pollution, dust, surface and ground water pollution incidents. Construction is also likely to result in impacts on the bat species through habitat loss/damage (foraging, commuting and roosting habitat), killing/injuring individual, light spills, noise, vibration, air pollution, dust, surface and groundwater pollution incidents. **Operation** The operation of the option could result in impacts on groundwater levels, which may have impacts on the water dependent habitat qualifying features of the SAC; H8310 Caves not open to the public. Therefore LSE from construction and operation activities cannot be ruled out at this stage and fur Furthermore, the operation of the option could result in impacts on groundwater levels and therefore the potential impacts on GWDTE within the North Somerset and Mendip Bats SAC and supporting foraging habitats needs further considerations. Therefore LSE from construction and operational activities, cannot be ruled out at this stage and further assessment will be required.
		Severn Estuary SAC	17km	Yes - LSEs	**Construction** Due to the distance between the SAC and the option (17km) and the lack of hydrological connectivity, construction works is not anticipated to result in impacts of the qualifying features of the SAC, SPA or Ramsar. **Operation** Therefore, operation of the option may result in impacts on water flows input to the Severn Estuary SAC and functionally linked habitats supporting migratory fish species associated with the Severn Estuary SAC. Impacts to the groundwater levels and GWDTE needs further assessments. Therefore, LSE from operational activities cannot be ruled out at this stage and further assessments are required through a Stage 2 Appropriate Assessment.
		Severn Estuary SPA and Ramsar	17km	Yes - LSEs	
P01_02	**Forum** This option would improve the output of existing sources by improving the efficiency of treatment processes at the site so that more of the licensed volume can be treated and put into supply. This scheme would involve the maximisation of the yield from an existing operational source at Forum (which is currently constrained by the performance of the membrane plants).	Mells Valley SAC	4.0km	Yes – LSE during construction and operation	**Construction** LSE identified during construction on greater horseshoe bat *Rhinolophus ferrumequinum* given proximity of nearby woodland habitat and foraging range of species. Mitigation measures required during construction, therefore Stage 2 Appropriate Assessment required if option selected. **Operation** Operation effects uncertain regarding flow changes in the River Sheppey and use of this watercourse by the bat species. Therefore Stage 2 Appropriate Assessment required if option selected.
		Mendip Woodlands SAC	5.7km	No LSE	Sufficient distance such that air quality issues during construction not anticipated on qualifying habitats. Habitat not water dependent therefore no LSEs during operation anticipated.
		North Somerset and Mendip Bats SAC	8.2km	Yes – LSE during construction and operation	**Construction** Sufficient distance such that air quality and noise, visual disturbance issues during construction not anticipated on qualifying species and habitats. Construction site considered sufficiently distant such that impacts to the bat species and qualifying habitats is unlikely. **Operation** Operation effects uncertain regarding flow changes in the River Sheppey and use of this watercourse by the bat species.

[32] See Appendix A for the qualifying features and the full assessment of LSEs.

Option No.	Option Name	European site	Proximity (km)	HRA Outcome	Comments
P08	**Alderley WTW** This option would involve the maximisation of the yields from existing operational source at Alderley, including the replacement of the current membranes to UV treatment. This option requires the upgrade of the water treatment works, with an expected increase in yield of 2 Ml/d (total capacity of the UV system: 7 Ml/d).	Severn Estuary SAC	16.3km	Yes – LSE during operation (uncertainty)	**Construction** Due to the distance between the option and the SAC, weir structures on the watercourse (capture fine sediment etc) and small extent of the works with upgrade of existing infrastructure within the treatment works, no impacts are anticipated from construction works. However due to future uncertainty about changes to fish passage at the structure it is not possible to rule out future likely significant effects to functionally linked habitats for migratory fish species. **Operation** The operational increase in abstraction at Alderley WTW may significantly reduce flow in the Ozleworth Brook and Little Avon. Flows into Berkley Pill are unlikely to be affected with the confluence of the Little Avon River. The large sluice structure at Berkley Pill is also likely to limit migratory fish into the watercourses, no salmon have been identified upstream of the sluice however potential future changes to fish passage at the structure can't be ruled out. European eels have been identified within upstream watercourses. In the context of the Severn estuary, changes in flow are considered minimal and therefore no impacts are anticipated upon the estuary. Due to the potential impacts from flow changes in potentially functionally linked habitat supporting migratory fish species associated with Severn Estuary SAC it is not possible to conclude no likely significant effects, further assessment would be required through a Stage 2 Appropriate Assessment.
		Severn Estuary SPA and Ramsar			
R007	**Pumped Refill of Chew Valley Reservoir** This option includes the transfer from the River Avon at Bath to extend yield period of reservoir. The option will require intake structure from the River Avon at Newton Meadows, new pipeline from the River Avon to Stowey WTW, pre-treatment of water prior to discharge into Chew reservoir (to reduce siltation and nutrient, and risk of spreading INNS) and upgrade to Stowey WTW within new land. Pumping is assumed to take place four months of the year (e.g. November to February or December to March).	Bath and Bradford on Avon Bats SAC	4.8km	Yes – LSE during construction	**Construction** Due to the distance between option and the SAC construction works could result in impacts upon the bat populations (Greater horseshoe bat, Bechstein's bat *Myotis bechsteinii* and Lesser horseshoe bat *Rhinolophus hipposideros*) and supporting habitats potentially present along the pipeline route (although to be contained in road where possible). **Operation** During operation, a minor discernible change on flow is expected. However, it is assumed that water flow will be protected by sensible measures and therefore reduction in water flow is considered to be minor over the winter months and is not anticipated to result in impacts upon the qualifying features of the SAC. As such, no LSEs during operation are considered likely.
		Chew Valley Lake SPA	1.4km	Yes – LSE during operation (uncertainty)	**Construction** Due to the distance between the SPA and the option, construction works are not anticipated to result in impacts upon northern shoveler through air pollution, dust emission, incidental pollutions or loss of supporting habitats. **Operation** Due to the uncertainty of the pre-treatment of the water at this stage, operation of the option may result in impacts to the SPA through siltation, increase of nutrients and transfer of INNS. While considered unlikely with additional filtration, LSE cannot be ruled out at this stage.
R08_02	**Bathford** This option is the development of a new supply source on the Middle River Avon at Bathford. Water would be treated on site via a new membrane plant. It will then be pumped to Tolldown Service Reservoir. Booster pumping stations would be required along the pipeline, including a new booster pumping station located at Banner Down.	Bath and Bradford on Avon Bats SAC	0.4km	Yes – LSE during construction	**Construction** Due to the distance between option and the SAC construction works could result in impacts upon the bat populations (Greater horseshoe bat, Bechstein's bat *Myotis bechsteinii* and Lesser horseshoe bat *Rhinolophus hipposideros*) and supporting habitats potentially present along the pipeline route (although to be contained in road where possible). **Operation** During operation, a minor discernible change on flow is expected. However, the increase in abstraction by 4 Ml/d would account for a 0.7% reduction in Q95 flows on the River Avon at the abstraction point. This is deemed to be a minor hydrological change, and therefore no impacts are anticipated upon the qualifying features of the SAC. As such, no LSEs during operation are considered likely.
		Severn Estuary SAC	28km	Yes – LSE during construction and operation	**Construction** Due to the hydrological connectivity between the SAC, SPA and Ramsar and option R08_02 via the River Avon, construction works may result in indirect impacts upon Severn Estuary EMS through surface pollution incidents and sedimentation. **Operation** Operation will affect flows within the River Avon and it is uncertain if this would impact flows in the estuarine part of Avonmouth. Fisheries surveys completed for the Bristol Water Drought Plan in 2018 reported the presence of migratory fish including brown/sea trout, Atlantic salmon, river lamprey and European eel in the River Chew, and as such it is likely they would be present in the River Avon. The passability of some of the weir structures on the River Avon is uncertain, however if present, changes in flow could result in impacts upon supporting habitats if present within the River Avon. Therefore LSE from construction and operational activities cannot be rules out at this stage, further assessment would be required.
		Severn Estuary SPA and Ramsar			

Option No.	Option Name	European site	Proximity (km)	HRA Outcome	Comments
R08_03	**Frome at Frenchay** Option is the development of a new supply source on the Bristol Frome at Frenchay (abstraction at this location). Water will be pumped to Littleton Water Treatment Works for treatment and distribution. A pumping station would be located on the abstraction site and a 13.2 km pipe.	Avon Gorge Woodlands SAC	8.5km	No LSE	**Construction** The habitats are sufficiently distant from the proposed pumping station and pipeline such that construction impacts (e.g. air quality issues) will not affect the site. **Operation** The habitats are above the mean high water level and disconnected from the River Avon. As such impacts from the abstraction upstream, is not considered to give rise to LSEs.
		River Wye SAC	6km	No LSEs	The option is location in a different catchment to the River Wye SAC, separated by the Severn Estuary. As such no construction or operational impacts are anticipated.
		Severn Estuary SAC	2.5km	Yes – LSE during construction and operation	**Construction** A new abstraction is required on the River Frome, and the pipeline crosses (assumed to be trenchless) under the watercourse and a number of tributaries to the Littleton WTW. The use of the River Frome by the migratory fish species of the Severn Estuary SAC is uncertain, and given works in proximity to the watercourse, there is a hydrological pathway for sedimentation and pollution incidents. As such, mitigation measures will be required during construction, therefore Stage 2 Appropriate Assessment required if option selected. **Operation** Although the WFD has concluded that an impact to in-river ecology is not anticipated, the use of the River Frome by migratory fish species is uncertain. Pass-forward flow to the estuary and LSEs to the other qualifying features is not anticipated. A Stage 2 Appropriate Assessment is therefore required to consider the migratory fish species.
		Wye Valley & Forest of Dean Bat Sites SAC	9.2km	Yes- LSE during construction only.	**Construction** Potential impacts to offsite supporting habitat for lesser horseshoe bat and greater horseshoe bat due to known foraging range of the species and pipeline construction through potentially suitable habitat. Mitigation measures required during construction, therefore Stage 2 Appropriate Assessment required if option selected. **Operation** The abstraction from the River Frome is deemed insufficient to impact river ecology and as such, no LSEs during operation are anticipated.
		Wye Valley Woodlands SAC	8.8km	Yes – LSE during construction only	**Construction** No LSEs to the qualifying habitats anticipated due to the distance. Potential impacts to offsite supporting habitat for lesser horseshoe bat due to known foraging range of the species and pipeline construction through potentially suitable habitat. Mitigation measures required during construction, therefore Stage 2 Appropriate Assessment required if option selected. **Operation** The abstraction from the River Frome is deemed insufficient to impact river ecology and as such, no LSEs during operation are anticipated.
		Severn Estuary SPA and Ramsar	2.5km	Yes – LSE during construction and operation	**Construction** A new abstraction is required on the River Frome, and the pipeline crosses (assumed to be trenchless) under the watercourse and a number of tributaries to the Littleton WTW. The use of the River Frome by the migratory fish species of the Severn Estuary Ramsar is uncertain, and given works in proximity to the watercourse, there is a hydrological pathway for sedimentation and pollution incidents to the estuaries feature. The qualifying bird species are considered less sensitive. As such, mitigation measures will be required during construction, therefore Stage 2 Appropriate Assessment required if option selected. **Operation** Although the WFD has concluded that an impact to in-river ecology is not anticipated, the use of the River Frome by migratory fish species is uncertain. A change in pass-forward flow to the estuary is not anticipated, and therefore LSEs to the other qualifying features unlikely. A Stage 2 Appropriate Assessment is therefore required to consider the migratory fish species.
R014	**Avonmouth WWTW Direct Effluent Reuse** This option would take treated effluent from Wessex Water's Avonmouth Wastewater Treatment Works for further treatment, and then put directly into supply at Littleton Treatment Works (blended with Sharpness water). Supply of approximately 10 Ml/d. Water would be treated first at Avonmouth (Reverse Osmosis)	Avon Gorge Woodlands SAC	4.2km	No LSEs	**Construction** The habitats are sufficiently distant from the proposed pumping station and pipeline such that construction impacts (e.g. air quality issues) will not affect the site. **Operation** The habitats are above the mean high water level and disconnected from the River Avon. As such impacts from the abstraction upstream, is not considered to give rise to LSEs.
		River Wye/Afon Gwy SAC	4.4km	Yes – LSEs during operation	**Construction**

Option No.	Option Name	European site	Proximity (km)	HRA Outcome	Comments
	first so that the effluent from the treatment can be discharged at the Avonmouth water recycling centre. A new 2.5km pipeline is required.				Due to the distance between the option and the SAC and due to the lack of hydrological connectivity (the option is not located within the same catchment of the River Wye), construction works is not anticipated to result in impacts. **Operation** Avonmouth WWTW is located c.8km downstream of the mouth of the River Wye, however changes in the waste-stream (chemical composition, salinity, pH, temperature etc) as result in the reduction in final effluent and reverse osmosis need to be considered in terms of potential deterioration of offsite habitats used by the migratory fish species (e.g. Atlantic salmon, sea lamprey) within the Severn Estuary and potential changes to olfactory cues. A Stage 2 Appropriate Assessment is therefore required to consider the migratory fish species.
		Severn Estuary/Môr Hafren SAC	0.1km	Yes – LSEs during construction and operation	**Construction** Due to the distance between the option R014 and the SAC, construction works may result in indirect impacts upon Sever Estuary SAC through surface and groundwater pollution incidents and sedimentation, dust and air pollution. As such, mitigation measures will be required and therefore a Stage 2 Appropriate Assessment should be undertaken if this option is selected. **Operation** Avonmouth WWTW is understood to discharge to the Severn Estuary, approximately around Unit 26 of the underlying Severn Estuary SSSI which is noted for saltmarsh habitat Therefore changes in the waste-stream resulting from the water recycling process (chemical composition, salinity, pH, temperature etc) and the reduction in final effluent freshwater input need to be considered in terms of potential deterioration of the immediate habitats around the outfall and impacts to the migratory fish species (e.g. Atlantic salmon, sea lamprey) within the Severn Estuary and potential changes to olfactory cues. Based on the Marine Protected Areas habitat mapping available in MAGIC.gov.uk, the following qualifying habitats need to be considered; 1130 Estuaries, 1140 Mudflats and sandflats not covered by seawater at low tide, 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) and 1170 Reefs. The three qualifying fish species (1095 Sea lamprey *Petromyzon marinus*, 1099 River lamprey *Lampetra fluviatilis*. 1103 Twaite shad *Alosa fallax*) and those under the estuary feature will need to be considered. A Stage 2 Appropriate Assessment is therefore required if this option is selected.
		Severn Estuary SPA and Ramsar	0.1km	Yes -LSEs during construction and operation	**Construction** Due to the distance between the option R014 and the SAC, construction works may result in indirect impacts upon Severn Estuary SPA and Ramsar through surface and groundwater pollution incidents and sedimentation, dust and air pollution. As such, mitigation measures will be required and therefore a Stage 2 Appropriate Assessment should be undertaken if this option is selected. **Operation** Avonmouth WWTW is understood to discharge to the Severn Estuary, approximately around Unit 26 of the underlying Severn Estuary SSSI which is noted for saltmarsh habitat Therefore changes in the waste-stream resulting from the water recycling process (chemical composition, salinity, pH, temperature etc) and the reduction in final effluent freshwater input need to be considered in terms of potential deterioration of the supporting habitats around the outfall for the qualifying bird and fish species, and deterioration to the habitats (see Severn Estuary SAC above) will need to be considered. A Stage 2 Appropriate Assessment is therefore required if this option is selected.
R016	**Huntspill Transfer** Transfer of water (20Ml/d) from the Huntspill River / Kings Sedgemoor drain during the winter period to provide support to Cheddar reservoir during dry winter periods. A new 19km pipeline to Axbridge will be required and treatment plant at Axbridge treatment works.	Mendip Limestone Grasslands SAC	1.1km	Yes – LSEs during construction	**Construction** Pipeline construction is required between Axbridge and Cheddar Reservoir which may give risk to air quality issues on the qualifying habitats. Although works are likely to be small (less than 1000 AADT or 200 HGVs a day) the potential construction haul route (A371) extends within 200m of the site and therefore further consideration is required through a Stage 2 Appropriate Assessment. Option R016 may result in direct and indirect impacts on greater horseshoe during construction works through loss of/damage to offsite habitats and disturbance (i.e. light spill, noise, vibration, air pollution, dust and incidental pollutions). Permanent changes to the drainage ditches, and potential drying of the area will also need to be considered when laying the pipeline route. As such, a Stage 2 Appropriate Assessment will be required if this option is selected. **Operation** Water abstraction is from the Huntspill River / Kings Sedgemoor which is in a separate catchment, and not likely to be within the foraging range of the bat species (watercourse is c.13km from the European site). Therefore no operational impacts are anticipated.

Option No.	Option Name	European site	Proximity (km)	HRA Outcome	Comments
		Mendip Woodlands SAC	0.8km	Yes – LSEs during construction	**Construction** Pipeline construction is required between Axbridge and Cheddar Reservoir which may give risk to air quality issues on the qualifying habitats. Although works are likely to be small (less than 1000 AADT or 200 HGVs a day) the potential construction haul route (A371) extends within 200m of the site and therefore further consideration is required through a Stage 2 Appropriate Assessment. **Operation** The qualifying features are not water dependent and no pathway for impact between the European site and Huntspill River/Kings Sedgemoor watercourse has been identified.
		North Somerset and Mendip Bats SAC	2.8km	Yes – LSEs during construction	**Construction** Due to the distance between the option's location and North Somerset and Mendip Bats and the lack of hydrological connectivity between the SAC and the option, construction works are not considered likely to result in impacts upon the qualifying habitats. Construction of the pipeline may result in direct and indirect impacts on the qualifying bat species during construction works through loss of/damage to offsite habitats and disturbance (i.e. light spill, noise, vibration, air pollution, dust and incidental pollutions). Permanent changes to the drainage ditches, and potential drying of the area will also need to be considered when laying the pipeline route. As such, a Stage 2 Appropriate Assessment will be required if this option is selected. **Operation** The operation of the option will abstract water from water bodies not hydrologically connected to the SAC, and located approximately 15km from the SAC, therefore no impacts during operation are anticipated.
		Severn Estuary/Môr Hafren SAC	5.6km	Yes – LSEs during construction and operation	**Construction** Due to the hydrological connectivity between the option and the SAC through Huntspill River, construction works are considered likely to result in impacts upon the Sac through surface water pollution incidents and sedimentation. **Operation** The operation of the option will require the transfer of water from the Huntspill River (20Ml/d) which may result in a reduction of volume that enters the Severn Estuary SAC and cause habitat deterioration in the immediate area downstream of the tidal sluice on the River Parrett. A hands-off flow/level condition would be required to prevent this from being an impact. Given the presence of the tidal sluice, it is considered unlikely that migratory fish are using the Huntspill River and therefore impacts to offsite functionally linked habitat used by migratory fish are not anticipated. As such, a Stage 2 Appropriate Assessment will be required if this option is selected.
		Severn Estuary SPA and Ramsar	5.6km	Yes – LSEs during construction and operation	**Construction** Due to the hydrological connectivity between the option and the Severn Estuary SPA/Ramsar through Huntspill River, construction works are considered likely to result in impacts upon the SPA/Ramsar through surface water pollution incidents and sedimentation as well as disturbance to the bird communities which may present within offsite supporting habitats. Permanent changes to the drainage ditches, and potential drying of the area will also need to be considered when laying the pipeline route, to avoid deterioration of functionally linked offsites supporting habitats. **Operation** As above for the Severn Estuary/Môr Hafren SAC.
		Somerset Levels SPA and Ramsar	0,2km	Yes – LSEs during construction and operation	**Construction** Construction works may result in impacts to functionally linked offsite supporting habitats if present within the project footprint, through habitat loss, degradation and disturbance (visual disturbance, noise, air pollution, dust, surface pollution incidents). **Operation** The operation of the option will require the transfer of water from the Huntspill River which may result in minor discernible changes to groundwater and surface water levels and may impact supporting habitats. Therefore, LSE from construction and operational activities, cannot be ruled out at this stage and further Stage 2 Appropriate Assessment will be required if this option is selected.
R24	**Honeyhurst** This option proposes to pump water from Honeyhurst to Cheddar Water Treatment	Mendip Limestone Grasslands SAC	2.6km	Yes – LSEs during construction and operation	**Construction** The site is approximately 2.6km from the likely construction area. There will be no direct effects and indirect construction effects on the grassland are very unlikely.

Option No.	Option Name	European site	Proximity (km)	HRA Outcome	Comments
	Works. This option would involve the construction of a new pumping station at the Honeyhurst site and the construction of a new pipeline (4.2km)				Greater horseshoe bats are potentially vulnerable to construction impacts. This relates to habitat fragmentation resulting from the removal of sections of linear features that bats use for navigation and commuting between roosting and foraging areas, and also loss of foraging habitat during construction. **Operation** Owing to the distance of the abstraction from the SAC and lack of hydrological connectivity, direct operational impacts on habitats are probably unlikely but this is currently uncertain. Wetland habitats provide foraging habitat for bats. The abstraction has potential to alter wetland habitats and the food resource. Further information is required on the hydrological effects of the scheme, regarding likely alterations to wetland habitats from abstraction. Therefore, LSE from construction and operational activities, cannot be ruled out at this stage and further Stage 2 Appropriate Assessment will be required if this option is selected.
		Mendip Woodlands SAC	0.9km	No LSEs	**Construction** The Mendip Woodlands SAC site is approximately 0.9kmm from the construction area. Direct or indirect construction effects are considered unlikely given the distance of the works to the site and intervening habitats. **Operation** The qualifying features are not water dependent and there is no pathway for impact.
		North Somerset and Mendip Bats SAC	0.9km	Yes – LSEs during construction and operation	**Construction** Direct or indirect construction effects are considered unlikely on the habitat qualifying features given the distance of the works to the site and intervening habitats. The bat species are potentially vulnerable to construction impacts. This relates to habitat fragmentation resulting from the removal of sections of linear features that bats use for navigation and commuting between roosting and foraging areas, and also loss of foraging habitat during construction. **Operation** The habitat qualifying features, with the exception of H8310 caves, are not water dependent. However, there is no hydrological connectivity to Stoke Brook and therefore no pathway for impact. Owing to the distance of the abstraction from the SAC and lack of hydrological connectivity, direct operational impacts on habitats are probably unlikely but this is currently uncertain. Wetland habitats provide foraging habitat for bats. The abstraction has potential to alter wetland habitats and the food resource. Further information is required on the hydrological effects of the scheme, regarding likely alterations to wetland habitats from abstraction. Therefore, LSE from construction and operational activities, cannot be ruled out at this stage and further Stage 2 Appropriate Assessment will be required if this option is selected.
		Severn Estuary/Môr Hafren SAC	12.7km	Yes – LSEs during construction and operation	The River Axe may provide functionally link habitats for protected migratory fish species. **Construction** Mitigation measures may be required during construction to prevent any adverse effects on the water quality of the River Axe and Stoke Brook tributary stream that might potentially affect designated fish species migrating through the River Axe system. Due to the hydrological connectivity between the SAC, SPA and Ramsar and option R24 via the River Axe, construction works may result in indirect impacts upon Severn Estuary EMS qualifying habitats through surface pollution incidents and sedimentation. **Operation** Further information is required on the hydrological effects of the scheme, regarding likely alterations to aquatic habitats from abstraction and impacts to migratory fish species. Impacts to the qualifying habitats are not anticipated given the small volume of water being abstracted and control sluices on the River Axe. Therefore, LSE from construction and operational activities, cannot be ruled out at this stage and further Stage 2 Appropriate Assessment will be required if this option is selected.
		Severn Estuary SPA and Ramsar	12.7km	Yes – LSEs during construction and operation	As for Severn Estuary/Môr Hafren SAC with regards habitats and fish. **Construction**

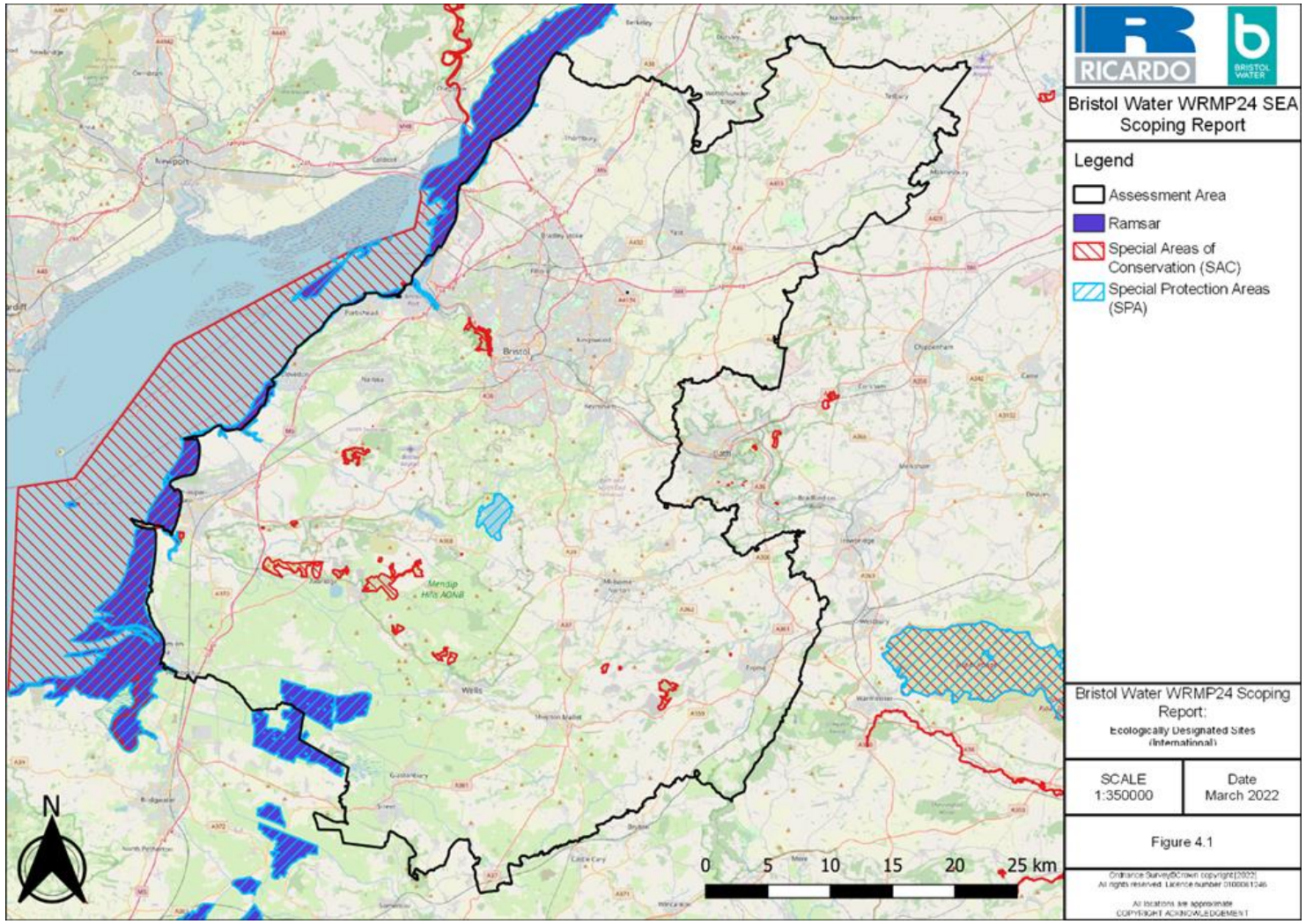
Option No.	Option Name	European site	Proximity (km)	HRA Outcome	Comments
R005[33]	**Cheddar Reservoir** Construction of a second reservoir at Cheddar of c.9,000Ml capacity with associated infrastructure and a new, dedicated WTW to provide a potable supply to Wessex Water's groundwater region in the east. The reservoir will be filled alongside the existing reservoir within Bristol Water's existing abstraction licences at Cheddar Springs and on the river Axe. The scheme will provide a peak deployable output of 36Ml/d. In the regional plan, this assumes that the reservoir will be utilised at capacity for 2 months of the year and at 25% capacity the rest of the year by Wessex Water only.				The pipeline is to be constructed through potentially functionally linked offsite habitat as it is located between three SPAs designated for a variety of overwintering birds; Severn Estuary Somerset Levels and Chew Valley Lake SPAs. Disturbance and habitat deterioration will need to be considered. **Operation** Further information is required on the hydrological effects of the scheme, regarding likely alterations to the functionally linked offsite habitat and use by the qualifying features of the SPA. Similarly, impacts to migratory fish within the River Axe will need to be considered. Therefore, LSE from construction and operational activities, cannot be ruled out at this stage and further Stage 2 Appropriate Assessment will be required if this option is selected.
		Somerset Levels and Moors SPA and Ramsar	4.9km	Yes – LSEs during construction and operation	**Construction** Construction works may result in impacts to functionally linked offsite supporting non-breeding/wintering habitats if present within the project footprint, through habitat loss, degradation and disturbance (visual disturbance, noise, air pollution, dust, surface pollution incidents). **Operation** Further information is required on the hydrological effects of the scheme, regarding likely alterations to the functionally linked offsite habitat and use by the qualifying features of the SPA. Therefore, LSE from construction and operational activities cannot be ruled out at this stage and further Stage 2 Appropriate Assessment will be required if this option is selected.
		Chew Valley Lake SPA	12km	Yes – LSEs during construction and operation	The Supplementary Advice on Conservation Objectives states "*There is likely to be an undefined functional link between this site and the Somerset Levels & Moors SPA and Severn Estuary (SPA, SAC, Ramsar)"*, as such, given the scheme is located within potential offsite functionally linked habitat between these three sites, construction and operation impacts are anticipated. See entries for Somerset Levels and Severn Estuary for further details.
		Chilmark Quarries SAC	8.4km	Yes – LSEs during construction and operation	**Construction** Although construction of the pipeline route and reservoir is outside the identified buffer zones identified in available guidance, it is considered that the numerous bat SACs across Wiltshire and the Mendips, and offsite functionally linked habitat, act to support metapopulations. As such, loss of linear features such as hedgerows and pipelines may result in changes in availability of foraging habitats, and therefore population dynamics. **Operation** The changes to the functioning of the ditch network, and availability of water, across the wider area is uncertain. This could result in a change in condition of offsite functionally linked foraging habitat. Therefore, LSE from construction and operational activities cannot be ruled out at this stage and further Stage 2 Appropriate Assessment will be required if this option is selected.
		Mells Valley SAC	8.7km	Yes – LSEs during construction and operation	The site components and construction areas are sufficiently distant such that the 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) and 8310 Caves not open to the public will not be affected. As with Chilmark Quarry SAC, the site is also designated for 1304 Greater horseshoe bat *Rhinolophus ferrumequinum* and therefore the same reasons as outlined above are relevant for screening this site in for a Stage 2 Appropriate Assessment.
		Mendip Limestone Grasslands SAC	1.9km	Yes – LSEs during construction and operation	**Construction:** The majority of the qualifying features are at sufficient distance such that they will not be affected by construction activities with the exception of H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*) and S1304 Greater horseshoe bat. Unit 5 of the underlying SSSI (Crook Peak to Shute Shelve Hill SSSI – Shute Shelve Hill) is identified as calcareous grassland. As this is within 200m of a potential construction haul route, A38/A371 junction, air quality impacts from HGV movements should be considered. As with Chilmark Quarry and Mells Valley SACs above, the construction and operation impacts to greater horseshoe bats is also relevant for screening this site in for Stage 2 Appropriate Assessment.

[33] Since the Draft WRMP24, it has been shown that there is not the need, in Bristol Water's supply area for an additional reservoir at the present time and as a result the option has been removed from Bristol Water's feasible options list. However, this option has been selected as a preferred option within the WCWR regional plan and is being developed within Bristol Water's supply area to serve the wider region as part of the RAPID gated process. Information concerning the Cheddar 2 option as assessed at the Draft WRMP24 stage has been retained in this report for reference.

Option No.	Option Name	European site	Proximity (km)	HRA Outcome	Comments
		Mendip Woodlands SAC	0.8km	No LSEs	No LSE are anticipated due to the distances between the European site and scheme components.
		North Somerset and Mendip Bats SAC	0.04km	Yes – LSEs during construction and operation	**Construction** The footprint of the scheme falls outside of the SAC boundaries so there is no likelihood of direct habitat loss to designated habitats within the SAC. Possible impacts from the construction of the scheme may come from potential exposure to air pollution due to increased traffic from construction vehicles (particularly if access gained via the B3135 which runs through the North Somerset and Mendip Bats SAC). The site is also designated for S1303 Lesser horseshoe bat *Rhinolophus hipposideros* and S1304 Greater horseshoe bat and therefore the same LSEs as outline for Chilmark Quarry and Mells Valley SACs apply. **Operation** The majority of the qualifying habitat features are not water dependent, with the exception of 8310 Caves not open to the public. Increased abstraction is required from Cheddar Springs, and the groundwater role in supporting the microclimate of the cave system is uncertain. The operational impacts to the bat species are as outlined for Chilmark Quarry and Mells Valley SAC. Therefore, LSEs from construction and operational activities cannot be ruled out at this stage and further Stage 2 Appropriate Assessment will be required if this option is selected.
		Salisbury Plain SAC	6.6km	No LSEs	**Construction** No LSE are anticipated due to the distances between the European site and scheme components. Although S1065 marsh fritillary butterfly *Euphydryas aurinia* can disperse between 15-20km, adult butterflies tend to be sedentary. Given the small scale (20m working width) and temporary nature of the pipeline construction, no LSEs are anticipated. **Operation** There is no hydrological connectivity between the scheme and European site, therefore no operational impacts are anticipated.
		Salisbury Plain SPA and Ramsar	6.6km	No LSEs	**Construction** No LSE are anticipated due to the distances between the European site and scheme components. Although the qualifying bird features are supported in offsite functionally linked habitat, the pipeline construction works are not required in proximity to any of the areas listed. Given the small scale (20m working width) and temporary nature of the pipeline construction, no LSEs are anticipated. **Operation** There is no hydrological connectivity between the scheme and European site, therefore no operational impacts are anticipated.
		Severn Estuary/Môr Hafren SAC	13.2km	Yes- LSEs during construction and operation	**Construction** Potential degradation of habitats from the introduction of invasive non-native species (INNS), sediments and pollution incidents caused by construction upstream of the Severn Estuary. Weston Bay, into which the River Axe discharges, is characterised by the following qualifying habitats; 1130 Estuaries, 1140 Mudflats and sandflats not covered by seawater at low tide and 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) as well as the following species; 1095 Sea lamprey *Petromyzon marinus*, 1099 River lamprey *Lampetra fluviatilis* and 1103 Twaite shad *Alosa fallax*. The use of the River Axe and Cheddar Yeo by the migratory fish species is uncertain, and therefore there is the potential for degradation to spawning sites within the watercourse network. **Operation** The operation of the scheme will require additional abstraction to fill Cheddar 2 reservoir. As such there may be a change in flows/velocities and wetted widths in the Cheddar Yeo and River Axe which could impact use by migratory fish. Changes to the hydrology of the network may also affect the passability of barriers on the system. Additional abstraction may also alter the volume of pass-forward freshwater into the estuary. Therefore, LSEs from construction and operational activities cannot be ruled out at this stage and further Stage 2 Appropriate Assessment will be required if this option is selected.
		Severn Estuary SPA and Ramsar	13.2km	Yes- LSEs during construction and operation	In addition to the LSEs outlined above for the Severn Estuary/Môr Hafren SAC, there may be a loss of offsite functionally linked habitat within the footprint of the Cheddar 2 reservoir. During operation, a change in hydrology across the system of rhynes and pills may change overwintering foraging and roosting habitat availability and condition.

Option No.	Option Name	European site	Proximity (km)	HRA Outcome	Comments
					Therefore, LSEs from construction and operational activities cannot be ruled out at this stage and further Stage 2 Appropriate Assessment will be required if this option is selected.
		Somerset Levels SPA and Ramsar	4.8km	Yes- LSEs during construction and operation	**Construction** The pipeline route crosses numerous watercourse which flow to the European site; River Altham, R. Whitelake, R.Redlake, R.Sheppey and Keward Brook. Potential degradation of habitats from the introduction of invasive non-native species (INNS), sediments and pollution incidents caused by construction upstream of the European site will need consideration. Loss of offsite functionally linked habitat within the footprint of Cheddar 2 Reservoir could impact the overwintering birds. Deterioration of wider connected offsite wetland habitats, e.g. localised drying, may occur due to inappropriate pipeline routing. **Operation** During operation, a change in hydrology across the system of rhynes and pills may change overwintering foraging and roosting habitat availability and condition. Therefore, LSEs from construction and operational activities cannot be ruled out at this stage and further Stage 2 Appropriate Assessment will be required if this option is selected.
P06	**Mendip Lakes** The programme involves the implementation of the catchment grant scheme to support farms to improve their infrastructure and reduce diffuse pollution risk. This option will not require construction works nor new water abstraction licence, however the yield benefit is estimated to be an average of 0.7Ml/d.	Several European sites within catchment or downstream		No LSEs	No LSEs anticipated from catchment management scheme, some benefits may arise from reductions in nutrient inputs.

Figure 4.1 European sites within and adjacent to Bristol Water's supply area



4.4 HRA STAGE 1 SCREENING CONCLUSIONS FOR PREFERRED PROGRAMME

The preferred programme includes the demand-side options and leakage reduction options under the main scenario presented (Preferred, Least Cost and Ofwat Core).

4.4.1 Demand side options

A total of 19 demand-side options have been considered under the preferred plan, least cost plan, Ofwat core and high climate change scenario. These options are listed in **Table 4.3**.

The HRA Stage 1 Screening process has indicated that no demand management options have the potential for LSE on European sites, based on existing information.

Table 4.3 Demand-side options included in the preferred plan, least cost plan, Ofwat core and high climate change scenario

Option No.	Option Name
131 03 Linear 50 2050	Reduction in leakage, in line with targets, by 2050
HH_E_016	Media campaigns to influence water use.
HH_M_009 (AMI) (15) Enhancement)	Watersmart - customer feedback from metering (Enhancement)
HH_P_002	Water labelling - with minimum standards
HH_P_001	Change WC standards
HH_P_005	New home standards
NHH_A_001	Business Efficiency Visits (BEV) - water efficiency audit - in person audit, fix and retrofit, targeted at specific sectors/businesses
NHH_E_002 (AMI)	SMART Online – Water smart online tools and resources (AMI).
NHH_N_002	Rainwater harvesting feasibility assessment and/or subsidised installation - target large water users
C016	Water saving devices – waterless urinals
NHH_T_003	Benchmarked rising block business tariffs

4.4.2 Supply side options

One supply side option, P06 Mendip Lakes catchment management, has been selected within the preferred programme for implementation by 2025, with the aim of reducing diffuse pollution. As summarised in **Table 4.2** no LSEs were identified for the option.

4.5 HRA STAGE 1 SCREENING FOR ALTERNATIVE PROGRAMMES

Scenario testing was undertaken regarding the biggest areas of uncertainty and in line with the scenarios set out in both the Environment Agency Water Resource Planning Guidance, and the Ofwat common reference scenarios and other relevant guidance. Modelling work undertaken by Bristol Water showed a set of leakage and demand policy delivery options that maintain the supply-demand balance deficit under most of the scenarios tested, with the exception of scenario 6 (‘High demand scenario (Environment Agency)’) and scenario 8 (‘Plausible worst case climate change and demand’). These scenarios result in Bristol Water needing the following supply options to meet an additional supply demand deficit, however, not until 2068 or later:

High demand scenario 6:

- P08 - Alderley WTW (increased production) (2069)
- P06 -Catchment Management of Mendip Lakes (2025)
- R014 - Avonmouth WWTW direct effluent reuse (2073
- R24 - Bring Honeyhurst Well source back into supply (2078)
- P01-02 - Forum WTW (increased production) (2079)

Plausible worst case climate change and demand scenario 8:

- P08 - Alderley WTW (increased production) (2068)
- P06 - Catchment Management of Mendip Lakes (2025)
- R014 - Avonmouth WWTW direct effluent reuse (2073)
- R24 - Bring Honeyhurst Well source back into supply (2078).

As summarised in **Table 4.2**, LSEs were identified on a number of European sites. These options have not been subject to a Stage 2 Appropriate Assessment as none of the options have been identified as being alternatives before 2035 (as per updated Water Resources Planning Guideline (April 2023)[34]) and there is therefore sufficient time to complete assessments of the options within the next cycle of the WRMP process, allowing the latest baseline and condition status to be included.

[34] Accessed at https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline.

5. CONCLUSIONS

Bristol Water has identified 11 demand-side options as part of the main scenario presented (Preferred, Least Cost and Ofwat Core) to maintain supplies to customers, with no supply-side options being required until after 2068, and only in the extreme scenario testing.

Water company WRMPs are subject to the provisions of the *Conservation of Habitats and Species Regulations 2017.* Bristol Water has a statutory duty to prepare a WRMP and is therefore the Competent Authority for the HRA of that plan. This HRA report accompanies the WRMP24 that has been updated to reflect representations made on the dWRMP24 during the public consultation period (November 2022 – February 2023). The report summarises the current and high-level assessment of Bristol Water preferred plan of options against the requirements of the Habitats Regulations. It also documents the iterative HRA process that has been applied through the development of the WRMP24.

For each option (or group of options, as appropriate), the assessment comprises:

- a 'screening' of European sites within the study area to identify those sites and features where there will self-evidently be 'no effect', 'no likely significant effects', or positive effects due to the option[35], and those where significant effects are likely or uncertain; and
- an 'appropriate assessment' of any European sites where significant effects cannot be excluded (this may include 'down-the-line' deferral of some options in accordance with established HRA practice, where appropriate).

The conservation objectives are taken into account at the screening and appropriate assessment stages as necessary.

5.1 STAGE 1 SCREENING

The screening has concluded that there will be no likely significant effects from the demand-side options.

The only realistic mechanism for a negative effect from a demand-side measure would be through any construction required (for example, the leakage reduction programme may require repair of a pipe in or near an SAC), but this cannot be meaningfully assessed at the strategic level since information on the location of specific intervention requirements (e.g. leaks; households requesting meters) is not available without specific investigations, which would form part of the option package, and there is consequently no information on the scale (etc.) of any construction required. Therefore, a project-level HRA will be required once information is available to confirm the findings of the plan level assessment, or complete the necessary appropriate assessment.

[35] Note, for options with 'no effects' or positive effects there is no possibility of 'in-combination' effects.

APPENDICES

Appendix 1 Stage 1 Screening Tables

Special Areas of Conservation (SACs)

Avon Gorge Woodlands SAC

European Site name:	**Avon Gorge Woodlands SAC (UK0012734)**	
Designation type: (SAC, SPA, Ramsar):	SAC	
Qualifying features:	**H9180 Tilio-Acerion forests of slopes, screes and ravines** Avon Gorge is representative of *Tilio-Acerion* forests in south-west England on the limestone cliffs and screes of a large river gorge. It is important because of the high concentration of small-leaved lime *Tilia cordata*, compared with other sites in the region, the presence of rare whitebeams *Sorbus* spp., including two unique to the Avon Gorge (*S. bristoliensis* and *S. wilmottiana*), and other uncommon plants, such as green hellebore *Helleborus viridis*. Other characteristic species include soft shield-fern *Polystichum setiferum* and hart's-tongue *Phyllitis scolopendrium*. Species-rich transitions to scrub and grasslands are associated with the woodland. Small groves of yew *Taxus baccata* also occur on some of the stonier situations. **H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)**	**Water Dependent?** No
Current conservation status (Article 17):	**H9180 Tilio-Acerion forests of slopes, screes and ravines** **Overall assessment of conservation status:** Unfavourable – bad (range – favourable; area – unfavourable – inadequate; specific structure and functions – unfavourable – bad; future prospects – unfavourable – bad) **Overall trend in conservation status**: Stable. **Main pressure and threats:** intensive grazing or overgrazing by livestock, problematic native species, plant and animal diseases, pathogens and pests, mixed source air pollution, air-borne pollutants. **H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)** **Overall assessment of conservation status:** Unfavourable-bad (range: favourable, area: unfavourable – inadequate, structure and function: unfavourable – bad, future prospects: unfavourable – bad). **Overall trend in conservation status**: Deteriorating **Main pressure and threats:** conversion into agricultural land, abandonment of grassland management, extensive grazing or undergrazing by livestock, application of synthetic fertilisers on agricultural land, agricultural activities generating diffuse pollution to surface or groundwaters, extraction of minerals, mixed source pollution to surface and ground waters, mixed source air pollution, air-borne pollutants, droughts and decreases in precipitation due to climate change, increases or changes in precipitation due to climate change.	
Conservation objectives:	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; • The extent and distribution of qualifying natural habitats • The structure and function (including typical species) of qualifying natural habitats, and • The supporting processes on which qualifying natural habitats rely	
SSSI condition assessment:	Avon Gorge SSSI: 46.92% favourable, 53.08% unfavourable – recovering.	
Site Improvement Plan (only threats and actions relevant to the WRMP):	• Invasive species: H6210 Dry grasslands and scrublands on chalk or limestone (important orchid sites), H9180 Mixed woodland on base-rich soils associated with rocky slopes – Effectively control invasive species to reduce impact, coordinated approach. • Undergrazing: H6210 Dry grasslands and scrublands on chalk or limestone (important orchid sites) – Grazing reintroduction projects. • Public access/disturbance: H6210 Dry grasslands and scrublands on chalk or limestone (important orchid sites), H9180 Mixed woodland on base-rich soils associated with rocky slopes – Engagement and management. • Disease: H9180 Mixed woodland on base-rich soils associated with rocky slopes – Monitor disease that affect trees, and take actions. • Changes in species distributions: H6210 Dry grasslands and scrublands on chalk or limestone (important orchid sites), H9180 Mixed woodland on base-rich soils associated with rocky slopes – Monitor species distribution. • Air pollution: impact of atmospheric nitrogen deposition: H6210 Dry grasslands and scrublands on chalk or limestone (important orchid sites), H9180 Mixed woodland on base-rich soils associated with rocky slopes – Control, reduce and ameliorate atmospheric nitrogen impacts.	

Option name	**Screening Assessment**	**Likely significant effect (LSE) alone?**	**If no LSE alone: Residual low-level effect requiring in-combination assessment**
Option R08-03: Frome at Frenchay	This option is located approximately 8.5km, north-east of Avon Gorge Woodlands SAC. Option R08_03 involves the development of a new supply source on the Bristol Frome at Frenchay. Water abstracted and pumped to Littleton WTW for treatment and distribution. This option would require a new pumping station at the abstraction site and a 13.2km pipeline. No further upgrades at Littleton WTW will be required. Potential impact pathways with regards to the qualifying feature of Avon Gorge Woodlands SAC include 1) Invasive species, 3) public access/disturbance, 5) changes in species distributions and 6) air pollution. **H9180 Tilio-Acerion forests of slopes, screes and ravines** and **H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)** The habitats are above the mean high water level and disconnected from the River Avon. As such impacts from construction and operation of the option are not anticipated to give rise to LSEs.	No	N/A
Option R014: Avonmouth WWTW Direct Effluent Reuse	This option is approximately 4.2km, north-west of Avon Gorge Woodlands SAC. Option R014 will require the treated effluent (~10Ml/d) to be taken from Wessex Water's Avonmouth Wastewater Treatment Works (WWTW) for further treatment, and put into supply at Littleton TW. The option will require the construction of a new pipe of 6.4km, from Avonmouth WWTW to connect to existing raw main. No new water abstraction licence would be required. Potential impact pathways with regards to the qualifying feature of Avon Gorge Woodlands SAC include 1) Invasive species, 3) public access/disturbance, 5) changes in species distributions and 6) air pollution. **H9180 Tilio-Acerion forests of slopes, screes and ravines and H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)** The habitats are above the mean high water level and disconnected from the River Avon. As such impacts from construction and operation of the option are not anticipated to give rise to LSEs.	No	N/A

Bath & Bradford on Avon Bats SAC

European Site name:	**Bath & Bradford on Avon Bats SAC (UK0012584)**	
Designation type: (SAC, SPA, Ramsar):	SAC	
Qualifying features:	**S1304 Greater horseshoe bat *Rhinolophus ferrumequinum*** This site in southern England includes the hibernation sites associated with 15% of the UK greater horseshoe bat *Rhinolophus ferrumequinum* population and is selected on the basis of the importance of this exceptionally large overwintering population. **S1323 Bechstein's bat *Myotis bechsteinii*** Small numbers of Bechstein's bats *Myotis bechsteinii* have been recorded hibernating in abandoned mines in this area, though maternity sites remain unknown. **S1303 Lesser horseshoe bat *Rhinolophus hipposideros***	**Water Dependent?** Yes – S1323 Bechstein's bat
Current conservation status (Article 17):	**S1304 Greater horseshoe bat *Rhinolophus ferrumequinum*** **Overall assessment of conservation status:** Favourable (range – favourable; population – favourable; habitat for species – favourable; future prospects – favourable) **Overall trend in conservation status**: Improving. **Main pressure and threats:** removal of small landscape features for agricultural lands parcel consolidation, abandonment of grassland management, livestock farming, logging without replanting or natural regrowth, extraction of minerals, roads, paths, railroads and related infrastructure, construction or modification in existing urban or recreational areas, sports, tourism or recreational activities, reduced fecundity/genetic depression, other natural catastrophes. **S1323 Bechstein's bat *Myotis bechsteinii*** **Overall assessment of conservation status:** Unknown (range – favourable; population – unknown; habitat for the species – unknown; future prospects – unknown) **Overall trend in conservation status**: Unknown. **Main pressure and threats:** removal of small landscape features for agricultural lands parcel consolidation, conversion to other types of forests including monocultures; logging, removal of dead and dying trees, including debris; removal of old trees; clear-cutting and removal of all trees, application of synthetic fertilisers in forestry, including liming of forest soils, roads, paths, railroads and related infrastructure, interspecific relations. **S1303 Lesser horseshoe bat *Rhinolophus hipposideros*** **Overall assessment of conservation status:** Favourable (range – favourable; population – favourable; habitat for species – favourable; future prospects – favourable) **Overall trend in conservation status**: Improving. **Main pressure and threats:** removal of small landscape features for agricultural lands parcel consolidation, abandonment of grassland management, livestock farming, conversion to other types of forests including monocultures, logging without replanting or natural regrowth, extraction of minerals, roads, paths, railroads and related infrastructure, construction or modification in existing urban or recreational areas, sports, tourism or recreational activities.	
Conservation objectives:	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; • The extent and distribution of the habitats of qualifying species • The structure and function of the habitats of qualifying species • 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.	
SSSI condition assessment:	Box Mine SSSI: 100% favourable. Brown's Folly SSSI: 75.01% favourable, 24.99% unfavourable – recovering. Combe Down and Bathampton Down Mines SSSI: 98.51% favourable, 1.49% unfavourable – recovering. Winsley Mines SSSI: 100% favourable.	
Site Improvement Plan (only threats and actions relevant to the WRMP):	• Planning Permission: general: S1303 Lesser horseshoe bat, S1304 Greater horseshoe bat, S1323 Bechstein`s bat – produce and promote advice and guidance on development control and strategic planning. • Change in land management: S1303 Lesser horseshoe bat, S1304 Greater horseshoe bat, S1323 Bechstein`s bat – provide information regarding appropriate management of habitats for bats. • Direct impact from third party: S1303 Lesser horseshoe bat, S1304 Greater horseshoe bat, S1323 Bechstein`s bat – Reduce vandalism and impacts of recreational activities. • Feature location / extent / condition unknown: S1323 Bechstein`s bat – investigate Bechstein's bat to improve knowledge of local population activity. • Offsite habitat availability / management S1303 Lesser horseshoe bat, S1304 Greater horseshoe bat, S1323 Bechstein`s bat – Investigate bat species use of surrounding habitat. • Public access/disturbance: S1303 Lesser horseshoe bat, S1304 Greater horseshoe bat, S1323 Bechstein`s bat – Review access arrangements and improve management. • Changes to site conditions: S1303 Lesser horseshoe bat, S1304 Greater horseshoe bat, S1323 Bechstein`s bat – Investigate the stability of mine and cave systems and feasibility for stabilisation. • Inappropriate designated boundary: S1303 Lesser horseshoe bat, S1304 Greater horseshoe bat, S1323 Bechstein`s bat – Review series of SAC sites and consider new sites for notification.	

Option name	**Screening Assessment**	**Likely significant effect (LSE) alone?**	**If no LSE alone: Residual low-level effect requiring in-combination assessment**
Option R007: Pumped Refill of Chew Valley Reservoir	This option is located approximately 4.8km, north-west of Bath & Bradford on Avon Bats SAC. Option R007 involve the transfer of water from the River Avon to the Chew Reservoir. The option would require intake structure from the River Avon at Newton Meadows, new pipeline to Stowey WTW, new pumping stations, upgrade to the treatment works at Stowey WTW (within new land). Pumping is assumed to take place four months of the year (e.g. November to February or December to March). Potential impact pathways with regards to the qualifying feature of Bath & Bradford on Avon Bats SAC include 1) planning permission, 2) change in land management, 3)direct impact from third party, 5)offsite habitat availability/management, 6)disturbance, 7) changes to site conditions. **S1304 Greater horseshoe bat *Rhinolophus ferrumequinum,* S1323 Bechstein's bat *Myotis bechsteinii and* S1303 Lesser horseshoe bat *Rhinolophus hipposideros*** Construction works may result in impacts upon the bat population associated with the SAC and supporting habitats potentially present, through direct habitat loss (roosting, foraging and commuting), habitat fragmentation, killing/injuring individuals, disturbance (light spills, noise, vibration, air pollution, dust, surface pollution incidents). This option will require pumping water within the River (assumed four months of the year over winter), therefore the operational of the option may result in a minor discernible effects on river flows in the River Avon which could result in impacts on the SAC and supporting habitats for bats. Therefore	Yes	N/A

European Site name:	Bath & Bradford on Avon Bats SAC (UK0012584)		
	LSE from construction and operational activities cannot be rules out at this stage, further assessment would be required through a Stage 2 Appropriate Assessment.		
Option R08_02: Bathford	This option is located approximately 0.4km, north of Bath & Bradford on Avon Bats SAC. Option R08_02 involve the development of a new supply source on the Middle River Avon at Bathford where 1.4Ml/d should be available. Water abstracted would be treated on site and pumped to Tolldown Service Reservoir. Therefore, booster pumping station would be required along the 16.7km pipeline and at Banner Down. The proposed pipeline route would follow minor roads and existing distribution mains routes where possible. Potential impact pathways with regards to the qualifying feature of Bath & Bradford on Avon Bats SAC include 1) planning permission, 2) change in land management, 3)direct impact from third party, 5)offsite habitat availability/management, 6)disturbance, 7) changes to site conditions. **S1304 Greater horseshoe bat *Rhinolophus ferrumequinum,* S1323 Bechstein's bat *Myotis bechsteinii and* S1303 Lesser horseshoe bat *Rhinolophus hipposideros*** Due to the distance between option and the SAC (0.4km), construction works is likely to result in impacts upon the bat population associated with the SAC and supporting habitats potentially present, through direct habitat loss (roosting, foraging and commuting), habitat fragmentation, killing/injuring individuals, disturbance (light spills, noise, vibration, air pollution, dust, surface pollution incidents). Furthermore, the operation of the option may result in minor discernible effects on river flows in the River Avon which could result in impacts on the SAC and supporting habitats for bats. Therefore LSE from construction and operational activities cannot be rules out at this stage, further assessment would be required through a Stage 2 Appropriate Assessment.	Yes	N/A

Chilmark Quarries SAC

European Site name:	**Chilmark Quarries SAC (UK0016373)**	
Designation type: (SAC, SPA, Ramsar):	SAC	
Qualifying features:	**S1304 Greater horseshoe bat *Rhinolophus ferrumequinum*** This complex of abandoned stone mines provides suitable hibernation conditions for a range of bat species and has a long history of usage by greater horseshoe bats Rhinolophus ferrumequinum. **S1308 Barbastelle *Barbastella barbastellus*** This complex of abandoned mines in central-southern England is regularly used by small numbers of barbastelle Barbastella barbastellus as a hibernation site. The site also contains an important assemblage of other bat species, including S1323 Bechstein's bat *Myotis bechsteinii*, for which this site has also been selected, indicating that conditions at this site are particularly favourable for the survival of these bat species. **S1323 Bechstein's bat *Myotis bechsteinii*** This complex of abandoned mines in central-southern England, is regularly used as a hibernation site by small numbers of Bechstein's bat *Myotis bechsteinii*. The site also contains a nationally important assemblage of other bats, including 1308 barbastelle *Barbastella barbastellus*, for which this site has also been selected, indicating that conditions are particularly favourable for the survival of these bat species. **S1303 Lesser horseshoe bat *Rhinolophus hipposideros***	**Water Dependent?** Yes – S1323 Bechstein's bat and S1308 barbastelle bats
Current conservation status (Article 17):	**S1304 Greater horseshoe bat *Rhinolophus ferrumequinum*** **Overall assessment of conservation status:** Favourable (range – favourable; population – favourable; habitat for species – favourable; future prospects – favourable) **Overall trend in conservation status**: Improving. **Main pressure and threats:** removal of small landscape features for agricultural lands parcel consolidation, abandonment of grassland management, livestock farming, logging without replanting or natural regrowth, extraction of minerals, roads, paths, railroads and related infrastructure, construction or modification in existing urban or recreational areas, sports, tourism or recreational activities, reduced fecundity/genetic depression, other natural catastrophes. **S1308 Barbastelle *Barbastella barbastellus*** **Overall assessment of conservation status:** Unknown (range – favourable; population – unknown; habitat for species – unknown; future prospects – unknown) **Overall trend in conservation status**: Unknown. **Main pressure and threats:** conversion from one type of agricultural land use to another; drainage for use as agricultural land; conversion to other types of forests including monocultures; logging without replanting or natural regrowth; logging of individual trees; removal of dead and dying trees, including debris; removal of old trees; clear-cutting and removal of all trees; and application of synthetic fertilisers in forestry, including liming of forest soils. **S1323 Bechstein's bat *Myotis bechsteinii*** **Overall assessment of conservation status:** Unknown (range – favourable; population – unknown; habitat for the species – unknown; future prospects – unknown) **Overall trend in conservation status**: Unknown. **Main pressure and threats:** removal of small landscape features for agricultural lands parcel consolidation, conversion to other types of forests including monocultures; logging, removal of dead and dying trees, including debris; removal of old trees; clear-cutting and removal of all trees, application of synthetic fertilisers in forestry, including liming of forest soils, roads, paths, railroads and related infrastructure, interspecific relations. **S1303 Lesser horseshoe bat *Rhinolophus hipposideros*** **Overall assessment of conservation status:** Favourable (range – favourable; population – favourable; habitat for species – favourable; future prospects – favourable) **Overall trend in conservation status**: Improving. **Main pressure and threats:** removal of small landscape features for agricultural lands parcel consolidation, abandonment of grassland management, livestock farming, conversion to other types of forests including monocultures, logging without replanting or natural regrowth, extraction of minerals, roads, paths, railroads and related infrastructure, construction or modification in existing urban or recreational areas, sports, tourism or recreational activities.	
Conservation objectives:	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; • The extent and distribution of habitats of qualifying species • The structure and function of the habitats of qualifying species • 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.	
SSSI condition assessment:	Chilmark Quarries SSSI: favourable 17.25%, unfavourable- recovering 82.75% Fonthill Grottoes SSSI: unfavourable- recovering 100%	
Site Improvement Plan (only threats and actions relevant to the WRMP):	• Public access/ disturbance – Threat – S1303 lesser horseshoe bat, S1304 greater horseshoe bat, S1308 Western barbastelle, S1323 Bechstein's bat – prevent unauthorised access through enforcement and use of bat grilles • Natural changes to site conditions – S1303 lesser horseshoe bat, S1304 greater horseshoe bat, S1308 Western barbastelle, S1323 Bechstein's bat – Improve stability, monitor conditions, investigate potential impacts of off-site activities • Offsite habitat availability/ management – Threat – S1303 lesser horseshoe bat, S1304 greater horseshoe bat, S1308 Western barbastelle, S1323 Bechstein's bat – Research of bats in wider landscape to inform agri-environmental decisions • Planning permission: general – Pressure/ threat – S1303 lesser horseshoe bat, S1304 greater horseshoe bat, S1308 Western barbastelle, S1323 Bechstein's bat – Research and implementation into potential impacts of developments • Air pollution: impact of atmospheric nitrogen deposition – Pressure – S1303 lesser horseshoe bat, S1304 greater horseshoe bat, S1308 Western barbastelle, S1323 Bechstein's bat – Control, reduce and ameliorate atmospheric nitrogen impacts	

Option name	**Screening Assessment**	**Likely significant effect (LSE) alone?**	**If no LSE alone: Residual low-level effect requiring in-combination assessment**
Option R005: Cheddar Reservoir	This option is approximately 8.4km, north-west of Chilmark Quarries SAC. Option R005 is based on option Cheddar 2 as developed within WCN SRO. This option includes the construction of a second reservoir at Cheddar (capacity c.9000Ml so surface area of 868,000m^2) with associated infrastructure and a new dedicated WTW. The reservoir would be filled alongside the existing reservoir and within the existing abstraction licence at Cheddar Springs and on the River Axe. Infrastructure required would include WTW, a 6.5km raw water main, a 48km potable water main and 6 pumping stations.	Yes	N/A

European Site name:	Chilmark Quarries SAC (UK0016373)		
	The relevant SIP threats and pressures for construction and operation of the scheme are (2) natural changes to site conditions, (3) offsite habitat availability/ management, (4) planning permission and (5) air pollution. **S1303 lesser horseshoe bat, S1304 greater horseshoe bat, S1308 Western barbastelle, S1323 Bechstein's bat** According to guidance for Bat SACs in Wiltshire[36] the scheme footprint falls outside of any roost core areas. However, there is still a possibility that the removal of trees and hedgerows for the construction of the scheme route could mean a loss of functionally linked habitat. Due to the distance between the sites air pollution is unlikely to cause any impacts to these species. Light pollution from construction works at night around commuting and feeding habitat may impact the fitness of individuals. Mitigation would be necessary to prevent these impacts. The scheme and the SAC are not hydrologically connected, it is unlikely that the operation of the scheme will have a LSE. LSE from construction works cannot be ruled out at this stage and further assessments are required. The changes to the functioning of the ditch network, and availability of water, across the wider area 7ncertainn. This could result in a change in condition of offsite functionally linked foraging habitat during operation of the option. Further assessment is required through a Stage 2 Appropriate Assessment.		

[36] Wiltshire Council (2015) Bat Special Areas of Conservations (SAC) Planning Guidance for Wiltshire. URL DRAFT (wiltshire.gov.uk)

Mells Valley SAC

European Site name:	**Mells Valley SAC (UK0012658)**	
Designation type: (SAC, SPA, Ramsar):	SAC	
Qualifying features:	**H6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)** **H8310 Caves not open to the public** **S1304 Greater horseshoe bat *Rhinolophus ferrumequinum*** Mells Valley in southern England is selected on the basis of the size of its exceptional breeding population. It contains the maternity site associated with a population comprising about 12% of the UK greater horseshoe bat Rhinolophus ferrumequinum population. A proportion of the population also hibernates at the site, though other hibernation sites remain unknown.	**Water Dependent?** Yes – H8310 Caves not open to the public
Current conservation status (Article 17):	**H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)** **Overall assessment of conservation status:** Unfavourable-bad (range: favourable, area: unfavourable – inadequate, structure and function: unfavourable – bad, future prospects: unfavourable – bad). **Overall trend in conservation status**: Deteriorating **Main pressure and threats:** conversion into agricultural land, abandonment of grassland management, extensive grazing or undergrazing by livestock, application of synthetic fertilisers on agricultural land, agricultural activities generating diffuse pollution to surface or groundwaters, extraction of minerals, mixed source pollution to surface and ground waters, mixed source air pollution, air-borne pollutants, droughts and decreases in precipitation due to climate change, increases or changes in precipitation due to climate change. **H8310 Caves not open to the public** **Overall assessment of conservation status:** Favourable (range – favourable; area – favourable; specific structure and functions – unknown; future prospects – favourable) **Overall trend in conservation status**: Stable. **Main pressure and threats:** agricultural activities generating point source or diffuse pollution to surface or groundwaters, extraction of minerals, sports, tourism and leisure activities, deposition and treatment of waste and garbage from household and recreational facilities, mixed source pollution to surface and ground waters, abiotic natural processes. **S1304 Greater horseshoe bat *Rhinolophus ferrumequinum*** **Overall assessment of conservation status:** Favourable (range – favourable; population – favourable; habitat for species – favourable; future prospects – favourable) **Overall trend in conservation status**: Improving. **Main pressure and threats:** removal of small landscape features for agricultural lands parcel consolidation, abandonment of grassland management, livestock farming, logging without replanting or natural regrowth, extraction of minerals, roads, paths, railroads and related infrastructure, construction or modification in existing urban or recreational areas, sports, tourism or recreational activities, reduced fecundity/genetic depression, other natural catastrophes.	
Conservation objectives:	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; • The extent and distribution of qualifying natural habitats and habitats of qualifying species • The structure and function (including typical species) of qualifying natural habitats • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site.	
SSSI condition assessment:	Old Ironstone Works, Mells SSSI: unfavourable- no change 100% St. Dunstan's Well Catchment SSSI: favourable 78.87%, unfavourable- recovering 2.48%, unfavourable- declining 18.65% Vallis Vale SSSI: favourable 33.03%, unfavourable- recovering 66.97%	
Site Improvement Plan (only threats and actions relevant to the WRMP):	• Public access/ disturbance – Threat – H8310 Caves not open to the public, S1304 greater horseshoe bat – improve site security • Wildfire/ arson – Threat – S1304 greater horseshoe bat – Remove flammable material and reduce fire risks • Direct impact from third party – Pressure – S1304 greater horseshoe bat – Maintain site security • Undergrazing – Pressure – S1304 greater horseshoe bat – Encourage the landowner to graze the limestone grassland • Inappropriate designation boundary – Pressure – S1304 greater horseshoe bat – Consider notification of the current maternity roost • Air pollution: impact of atmospheric nitrogen deposition – Pressure – H6210 Semi-natural dry grasslands and scrubland facies on chalk or limestone (important orchid sites)	
Option name	**Screening Assessment**	**Likely significant effect (LSE) alone?** / **If no LSE alone: Residual low-level effect requiring in-combination assessment**
Option P01_02: Forum	This option is approximately 2.6km, south-west of Mells Valley SAC. Option P01_02 would aim to improve the efficiency of treatment processes at the site so that more of the licensed volume can be treated and put into supply. Therefore this option will involve the maximisation of the yield from an existing operation source at Forum and would include the upgrade of the treatment processes within the site. No further infrastructure are deemed required at this stage. Potential impact pathways with regards to the qualifying feature of Mells Valley SAC include 1) disturbance, 3) direct impact from third party and 6) air pollution. **H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*) and H8310 Caves not open to the public** Due to the distance between the SAC and option P01_02 (2.6km) and due to the lack of hydrological connectivity, construction works are not considered to likely result in impacts upon the qualifying features of the SAC. Operation of the option may impact groundwater level, however the option will not require a new water abstraction licence and the option is about improving the treatment processes. Therefore, the operation of the option is not considered to have an impact on Mells Valley SAC. LSE from construction and operation can be ruled out at this stage and no further assessment would be required.	No / No
	S1304 Greater horseshoe bat *Rhinolophus ferrumequinum* As per the Supplementary Advice for Mells Valley SAC, '*non-breeding greater horseshoe adults can forage up to 4km from roost sites. For breeding females and juveniles, the distance tends to be roughly half this i.e. 2km (English Nature, 2003)*'.	Yes / N/A

European Site name:	Mells Valley SAC (UK0012658)		
	Due to the distance between the SAC and option P01_02 (2.6km), construction works is considered likely to result in impacts on greater horseshoe through supporting habitat loss/damage (foraging, commuting and roosting habitats) and disturbance (light spills, air pollution, dust, noise, vibration, surface water pollution incidents). The operation of the option could result in impacts on groundwater levels and therefore the potential impacts on GWDTE within the Mells Valley SAC and its supporting habitats needs further considerations. However, impacts are considered minor as the option will not require a new water licence abstraction. Therefore LSE from construction and operational activities, cannot be ruled out at this stage and further assessment will be required through a Stage 2 Appropriate Assessment.		
Option R005: Cheddar Reservoir	This option is approximately 8.7km, south-west of Mells Valley SAC. Option R005 is based on option Cheddar 2 as developed within WCN SRO. This option includes the construction of a second reservoir at Cheddar (capacity c.9000Ml so surface area of 868000m^2) with associated infrastructure and a new dedicated WTW. The reservoir would be filled alongside the existing reservoir and within the existing abstraction licence at Cheddar Springs and on the River Axe. Infrastructure required would include WTW, a 6.5km raw water main, a 48km potable water main and 6 pumping stations. Potential impact pathways with regards to the qualifying feature of Mells Valley SAC include 1) disturbance, 3) direct impact from third party and 6) air pollution. **H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*) and H8310 Caves not open to the public** Due to the distance between the SAC and option R005 (8.7km) and due to the lack of hydrological connectivity between the option (pipeline construction works at its closest location), construction works are not considered to likely result in impacts upon the qualifying features of the SAC. The option will not require additional water abstraction licence. The operation of the scheme may involve increased abstraction from Cheddar springs but these will still be within the limits of the existing abstraction licence. Under the current licence it is anticipated that negatively affects to water dependent habitats are not likely. Therefore, LSE from construction and operation can be ruled out at this stage and no further assessment would be required. No residual impacts are anticipated upon the SAC, therefore no in-combination LSE are anticipated.	No	No
	S1304 Greater horseshoe bat *Rhinolophus ferrumequinum* As per the Supplementary Advice for Mells Valley SAC, '*non-breeding greater horseshoe adults can forage up to 4km from roost sites. For breeding females and juveniles, the distance tends to be roughly half this i.e. 2km (English Nature, 2003)*'. The footprint of the scheme falls outside of the SAC boundaries so direct disturbance of brooding and nesting sites is unlikely during the construction and operation of the scheme. It is possible during the construction of the scheme that building activities at night-time, for example bright lighting and the increase of construction traffic could disturb these species within functionally linked habitat. Other impacts may occur if the removal of trees, hedgerows or other features used by the species for commuting and feeding occurs within functionally linked habitat. According to Mendip council's guidance on bats parts of the scheme fall outside of the three consultation zones, meaning surveys are unlikely to be required. The operation of the scheme may involve increased abstraction from Cheddar Springs but these will still be within the limits of the existing abstraction licence. The changes to the functioning of the ditch network, and availability of water, across the wider area is uncertain. This could result in a change in condition of offsite functionally linked foraging habitat during operation of the option. Further assessment is required through a Stage 2 Appropriate Assessment for both the construction and operation phase.	Yes	N/A

Mendip Limestone Grasslands SAC

European Site name:	**Mendip Limestone Grasslands SAC (UK0030203)**	
Designation type: (SAC, SPA, Ramsar):	SAC	
Qualifying features:	**H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)** This site comprises coastal and inland sections of the Carboniferous Limestone outcrops of the Mendips. The coastal headland and inland hills support the largest area of CG1 *Festuca ovina – Carlina vulgaris* grassland in England, including two sub-types (CG1a *Carex humilis* and CG1c *Trinia glauca* sub-communities) known from no other site in the UK. Areas of short-turf CG2 *Festuca ovina – Avenula pratensis* grassland also occur inland. The site is exceptional in that it supports a number of rare and scarce vascular plants typical of the oceanic southern temperate and Mediterranean elements of the British flora. These include white rock-rose *Helianthemum apenninum*, Somerset hair-grass *Koeleria vallesiana* and honewort *Trinia glauca*. Transitions to limestone heath (4030 European dry heaths) situated on flatter terrain also occur. **H4030 European dry heaths** **H8310 Caves not open to the public** **H9180 Tilio-Acerion forests of slopes, screes and ravines** **S1304 Greater horseshoe bat, *Rhinolophus ferrumequinum*** **Water Dependent?** Yes H4030 European dry heaths H8310 Caves not open to the public	
Current conservation status (Article 17):	**H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)** **Overall assessment of conservation status:** Unfavourable-bad (range: favourable, area: unfavourable – inadequate, structure and function: unfavourable – bad, future prospects: unfavourable – bad). **Overall trend in conservation status**: Deteriorating **Main pressure and threats:** conversion into agricultural land, abandonment of grassland management, extensive grazing or undergrazing by livestock, application of synthetic fertilisers on agricultural land, agricultural activities generating diffuse pollution to surface or groundwaters, extraction of minerals, mixed source pollution to surface and ground waters, mixed source air pollution, air-borne pollutants, droughts and decreases in precipitation due to climate change, increases or changes in precipitation due to climate change. **H4030 European dry heaths** **Overall assessment of conservation status:** Unfavourable-bad (range: favourable, area: favourable, structure and function: unfavourable – bad, future prospects: unfavourable – bad). **Overall trend in conservation status**: Improving **Main pressure and threats:** intensive grazing or overgrazing by livestock, extensive grazing or undergrazing by livestock, burning for agriculture, suppression of fire for agriculture, conversion to forest from other land uses or afforestation, wind, wave and tidal power, including infrastructure, hydropower, management of fishing stocks and games, problematic native species, mixed source air pollution, air-borne pollutants. **H9180 Tilio-Acerion forests of slopes, screes and ravines** **Overall assessment of conservation status:** Unfavourable – bad (range – favourable; area – unfavourable – inadequate; specific structure and functions – unfavourable – bad; future prospects – unfavourable – bad) **Overall trend in conservation status**: Stable. **Main pressure and threats:** intensive grazing or overgrazing by livestock, problematic native species, plant and animal diseases, pathogens and pests, mixed source air pollution, air-borne pollutants. **H8310 Caves not open to the public** **Overall assessment of conservation status:** Favourable (range – favourable; area – favourable; specific structure and functions – unknown; future prospects – favourable) **Overall trend in conservation status**: Stable. **Main pressure and threats:** agricultural activities generating point source or diffuse pollution to surface or groundwaters, extraction of minerals, sports, tourism and leisure activities, deposition and treatment of waste and garbage from household and recreational facilities, mixed source pollution to surface and ground waters, abiotic natural processes. **S1304 Greater horseshoe bat *Rhinolophus ferrumequinum*** **Overall assessment of conservation status:** Favourable (range – favourable; population – favourable; habitat for species – favourable; future prospects – favourable) **Overall trend in conservation status**: Improving. **Main pressure and threats:** removal of small landscape features for agricultural lands parcel consolidation, abandonment of grassland management, livestock farming, logging without replanting or natural regrowth, extraction of minerals, roads, paths, railroads and related infrastructure, construction or modification in existing urban or recreational areas, sports, tourism or recreational activities, reduced fecundity/genetic depression, other natural catastrophes.	
Conservation objectives:	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; • The extent and distribution of qualifying natural habitats and habitats of qualifying species • The structure and function (including typical species) of qualifying natural habitats • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site.	
SSSI condition assessment:	Brean Down SSSI: favourable 100% Crook Peak to Shute Shelve Hill SSSI: favourable 6.08%, unfavourable- recovering 93.92% Uphill Cliff SSSI: favourable 100%	
Site Improvement Plan (only threats and actions relevant to the WRMP):	• Inappropriate scrub control – Threat – H6210 Dry grassland and scrubland on chalk or limestone (important orchid sites) – Control scrub through funding or supporting existing local partnership • Change in land management – Threat – H6210 Dry grassland and scrubland on chalk or limestone (important orchid sites) – Ensure stocking levels are maintained • Disease – Threat – H9180 Mixed woodland on base-rich soils associated with rocky slopes – Monitor for disease outbreak and mitigate effects • Air pollution: impacts of atmospheric nitrogen deposition – Pressure – H4030 European dry heaths, H6210 Dry grassland and scrubland on chalk or limestone (important orchid sites), H9180 Mixed woodland on base-rich soils associated with rocky slopes – Control and reduce the impacts of atmospheric deposition	
Option name	**Screening Assessment**	**Likely significant effect (LSE) alone?**	**If no LSE alone: Residual low-level effect requiring in-combination assessment**

European Site name:	Mendip Limestone Grasslands SAC (UK0030203)		
Option P01_01: Charterhouse	This option is approximately 5.1km, east of Mendip Limestone Grasslands SAC. Option P01_01 will require low lift pumps from the Upper Springs to the treatment works and an extension of the treatment process for the additional 0.74 Ml/d. This option will use existing raw water mains from the Upper and Lower Springs, however there are some uncertainties if work to the water mains will be required. Potential impact pathways with regards to the qualifying feature of Mendip Limestone Grasslands SAC include 2) change in land management and 4) air pollution. **H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*), H4030 European dry heaths, H8310 Caves not open to the public and H9180 Tilio-Acerion forests of slopes, screes and ravines** Due to the distance between the option's location and Mendip Limestone Grasslands SAC (5.1km) and the lack of hydrological connectivity between the SAC and the option, construction works is not considered likely to result in indirect through air pollution, dust, incidental surface and groundwater pollution. Additional water abstraction may result in impacts to the groundwater levels. However due to the small amount to be abstraction (0.74Ml/d) and the lack of requirement for an updated abstraction licence, the operation of the licence is not considered to have impacts on the habitats. Therefore LSE from construction and operational activities, can be ruled out at this stage and further assessment is not considered required.	No	Yes
	S1304 Greater horseshoe bat, *Rhinolophus ferrumequinum* As per the Supplementary Advice for Mendip Limestone Grasslands SAC, '*non-breeding greater horseshoe adults can forage up to 4km from roost sites. For breeding females and juveniles, the distance tends to be roughly half this i.e. 2km (English Nature, 2003)*'. Due to the distance between option P01_01 and the SAC, the option is not considered likely to result in direct impacts on the qualifying features. However, construction works may result in impacts to supporting habitats if present and result in loss of/damage to supporting roosting features, loss or damage to supporting foraging and commuting habitats, killing/injuring individuals and disturbance (i.e. light spill, noise, vibration, air pollution, dust and incidental pollutions). The operation of the option could result in impacts on groundwater levels and therefore the potential impacts on GWDTE within the Mendip Limestone Grasslands SAC needs further considerations. Therefore LSE from operational activities, cannot be ruled out at this stage and further assessment will be required through a Stage 2 Appropriate Assessment.	Yes	N/A
Option R016: Huntspill transfer	This option is located approximately 1.1km south-east of the Mendip Limestone Grasslands SAC. Option R016 will involve the transfer of water from the Huntspill River/Kings Sedgemoor drain during the winter period to provide support to Cheddar Reservoir during dry winter periods. The option will require the construction of a 19km pipeline to Axbridge, upgrade of the infrastructures at Axbridge TW on an additional land and a short pipeline from Axbridge to Cheddar reservoir. Potential impact pathways with regards to the qualifying feature of Mendip Limestone Grasslands SAC include 2) change in land management and 4) air pollution **H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*), H4030 European dry heaths, H8310 Caves not open to the public and H9180 Tilio-Acerion forests of slopes, screes and ravines** Due to the distance between the option's location and Mendip Limestone Grasslands SAC (1.1km) the option R016 and due to the hydrological connectivity via the Cheddar Yeo, construction works, in particular the construction of a pipeline crossing the Cheddar Yeo upstream of the SAC, may result in impacts through surface and groundwater pollution incidents. Construction may also result in direct damage and loss of habitats supporting the qualifying features. The operation of the option will abstract water from stream and drains not hydrologically connected to the SAC and therefore no impacts during operation are anticipated. Therefore LSE from construction activities, cannot be ruled out at this stage and further assessment will be required through a Stage 2 Appropriate Assessment.	Yes	N/A
	S1304 Greater horseshoe bat, *Rhinolophus ferrumequinum* Option R016 is likely to result in direct and indirect impacts on greater horseshoe during construction works through loss of/damage to supporting roosting features, loss or damage to supporting foraging and commuting habitats, killing/injuring individuals and disturbance (i.e. light spill, noise, vibration, air pollution, dust and incidental pollutions). The operation of the option could result in minor discernible impacts on groundwater levels and therefore the potential impacts on GWDTE within the Mendip Limestone Grasslands SAC needs further considerations. Therefore LSE from construction and operational activities, cannot be ruled out at this stage and further assessment will be required through a Stage 2 Appropriate Assessment.	Yes	N/A
Option R24: Honeyhurst	This option is located approximately 1.3km south-east of the Mendip Limestone Grasslands SAC. Option R24 will involve the refurbishment of Honeyhurst Well to bring it back into service and pump water from Honeyhurst to Cheddar WTW. This option would involve the construction of a new pumping station at the Honeyhurst site and a new 4.2km pipeline. There are no further requirements to upgrade Cheddar TW. Potential impact pathways with regards to the qualifying feature of Mendip Limestone Grasslands SAC include 2) change in land management and 4) air pollution **H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*), H4030 European dry heaths, H8310 Caves not open to the public and H9180 Tilio-Acerion forests of slopes, screes and ravines** Due to the distance between the option's location and Mendip Limestone Grasslands SAC (1.3km) the option R24 and due to the hydrological connectivity via the Cheddar Yeo, construction works, in particular the construction of a pipeline crossing the Cheddar Yeo upstream of the SAC, may result in impacts through surface and groundwater pollution incidents. Construction may also result in direct damage and loss of habitats supporting the qualifying features. The operation of the option will abstract water from Honeyhurst and may have minor discernible impacts to the groundwater levels. Therefore LSE from construction and operational activities, cannot be ruled out at this stage and further assessment will be required through a Stage 2 Appropriate Assessment.	Yes	N/A
	S1304 Greater horseshoe bat, *Rhinolophus ferrumequinum* Option R24 is likely to result in direct and indirect impacts on greater horseshoe during construction works through loss of/damage to supporting roosting features, loss or damage to supporting foraging and commuting habitats, killing/injuring individuals and disturbance (i.e. light spill, noise, vibration, air pollution, dust and incidental pollutions). The operation of the option could result in minor discernible impacts on groundwater levels and therefore the potential impacts on GWDTE	Yes	N/A

European Site name:	Mendip Limestone Grasslands SAC (UK0030203)		
	within the Mendip Limestone Grasslands SAC needs further considerations. Therefore LSE from construction and operational activities, cannot be ruled out at this stage and further assessment will be required.		
Option P06: Mendip Lakes	This option is located approximately 1.4km, south-east of the Mendip Limestone Grasslands SAC (Cheddar Reservoir considered to be the closest location). Option P06 is to continue the established programme of catchment management to reduce nutrient loads. The programme involves the implementation of the catchment grant scheme to support farms to improve their infrastructure and reduce diffuse pollution risk. This option will not require construction works nor new water abstraction licence, however the yield benefit is estimated to be an average of 0.7Ml/d. Potential impact pathways with regards to the qualifying feature of Mendip Limestone Grasslands SAC include 2) change in land management and 4) air pollution **H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*), H4030 European dry heaths, H8310 Caves not open to the public and H9180 Tilio-Acerion forests of slopes, screes and ravines** Due to the lack of construction works in relation to option P06, no LSE are anticipated from construction activities. Due to the lack of hydrological connectivity between the reservoirs and Mendip Limestone Grasslands SAC , operational activities which may result in greater water abstraction are not considered to have an impact on the SAC. Furthermore, as per the WFD assessment, it is considered that such minor additional water abstraction (yield benefit of 0.7Ml/d to be distributed between the three reservoirs) is considered compliant with the WFD and therefore is not considered likely to result in changes to hydrology of the downstream water body. Therefore no LSE from construction and operation activities are anticipated from option P06 upon the habitat qualifying features of the SAC. No residual impacts are anticipated upon the SAC, therefore no in-combination LSE are anticipated.	No	No
	S1304 Greater horseshoe bat, *Rhinolophus ferrumequinum* Due to the lack of construction works in relation to option P06, no LSE are anticipated from construction activities. Operational activities will result in additional water abstraction, however due to the lack of hydrological connectivity with downstream waterbodies and downstream supporting habitats, additional abstractions at Cheddar Reservoir (located within Bat Consultation Zone) and Chew Reservoir are not considered likely to result in LSE on supporting habitats for the bat populations. Additional abstraction at Blagdon Reservoir may result in minor impacts on the hydrology of the downstream water body and associated supporting habitats. However, as per the WFD assessment, it is considered that such minor additional water abstraction (yield benefit of 0.7Ml/d to be distributed between the three reservoirs) is compliant with the WFD and therefore is not considered likely to result in changes to hydrology of the downstream water body (Congresbury Yeo). Therefore no LSE from construction and operation activities are anticipated from option P06 upon the habitat qualifying features of the SAC.	No	Yes
Option R005: Cheddar Reservoir	This option is approximately 1.9km, south-east of Mendip Limestone Grasslands SAC. Option R005 is based on option Cheddar 2 as developed within WCN SRO. This option includes the construction of a second reservoir at Cheddar (capacity c.9000Ml so surface area of 868000m^2) with associated infrastructure and a new dedicated WTW. The reservoir would be filled alongside the existing reservoir and within the existing abstraction licence at Cheddar Springs and on the River Axe. Infrastructure required would include WTW, a 6.5km raw water main, a 48km potable water main and 6 pumping stations. Potential impact pathways with regards to the qualifying feature of Mendip Limestone Grasslands SAC include 2) change in land management and 4) air pollution **H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*), H4030 European dry heaths, H8310 Caves not open to the public and H9180 Tilio-Acerion forests of slopes, screes and ravines** The footprint of the scheme falls outside of the SAC boundaries so there is no likelihood of direct habitat loss to designated habitats within the SAC. The majority of the qualifying features are at sufficient distance such that they will not be affected by construction activities with the exception of H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*). Unit 5 of the underlying SSSI (Crook Peak to Shute Shelve Hill SSSI – Shute Shelve Hill) is identified as calcareous grassland. As this is within 200m of a potential construction haul route, A38/A371 junction, air quality impacts from HGV movements should be considered. Under the current licence it is anticipated that negatively affects to water dependent habitats are not likely.	Yes	No
	S1304 Greater horseshoe bat, *Rhinolophus ferrumequinum* The footprint of the scheme falls outside of the Mendip Limestone Grasslands SAC boundaries so there is no likelihood of direct loss of habitat used by these species during the construction and operation of the scheme. It is possible during the construction of the scheme that building activities at night-time, for example bright lighting and the increase of construction traffic could disturb these species. Other impacts may occur if the removal of trees, hedgerows, supporting habitat or other features used by the species for commuting and feeding occurs for construction purposes. Terrestrial foraging habitat (board-leaved woodland, hedges) may be affected by the creation and operation of the new reservoir. Therefore, the option may result in LSE during construction. The changes to the functioning of the ditch network, and availability of water, across the wider area is uncertain. This could result in a change in condition of offsite functionally linked foraging habitat during operation of the option. Further assessment is required through a Stage 2 Appropriate Assessment for both the construction and operation phases.	Yes	N/A

Mendip Woodlands SAC

European Site name:	**Mendip Woodlands SAC (UK0030048)**	
Designation type: (SAC, SPA, Ramsar):	SAC	
Qualifying features:	**H9180 *Tilio-Acerion* forests of slopes, screes and ravines* Priority feature** Mendip Woodlands in south-west England is a relatively extensive example of Tilio-Acerion forests on limestone. It is a cluster of three ash-dominated woods on Carboniferous limestone. A rich variety of other trees and shrubs are present, including elm Ulmus spp. and, locally, small-leaved lime Tilia cordata. At Ebbor Gorge elm rather than lime is mixed with ash *Fraxinus excelsior* in a steep-sided gorge; at both Rodney Stoke and Cheddar Wood lime and ash are found on rocky slopes with patches of deeper soil between the outcrops. Ferns characteristic of this woodland type, such as hart's-tongue *Phyllitis scolopendrium* and shield-ferns *Polystichum* spp., are common. The site is in the centre of the range of common dormouse *Muscardinus avellanarius* and holds a large population of this species.	**Water Dependency** No
Current conservation status (Article 17):	**H9180 Tilio-Acerion forests of slopes, screes and ravines** **Overall assessment of conservation status:** Unfavourable – bad (range – favourable; area – unfavourable – inadequate; specific structure and functions – unfavourable – bad; future prospects – unfavourable – bad) **Overall trend in conservation status**: Stable. **Main pressure and threats:** intensive grazing or overgrazing by livestock, problematic native species, plant and animal diseases, pathogens and pests, mixed source air pollution, air-borne pollutants.	
Conservation objectives:	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; • The extent and distribution of qualifying natural habitats • The structure and function (including typical species) of qualifying natural habitats, and • The supporting processes on which qualifying natural habitats rely	
SSSI condition assessment:	Asham Wood SSSI: 20.69% favourable, 79.31% unfavourable – recovering. Cheddar Wood SSSI: unfavourable- recovering 95.90%, unfavourable- declining 4.10% Ebbor Gorge SSSI: favourable 74.31%, unfavourable- recovering 25.69% Rodney Stoke SSSI: favourable 67.16%, unfavourable- recovering 21.06%, unfavourable- no change 11.78%	
Site Improvement Plan (only threats and actions relevant to the WRMP):	• Vehicle: illicit – Threat – H9180 Mixed woodland on base-rich soils associated with rocky slopes – Improve site security through liaison and enforcement • Deer – Pressure/ threat – H9180 Mixed woodland on base-rich soils associated with rocky slopes – Develop an adequate deer exclusion/ management plan • Disease – Threat – H9180 Mixed woodland on base-rich soils associated with rocky slopes – Monitor and implement a bio-security plan for Chalara disease • Air pollution: impact of atmospheric nitrogen deposition – Pressure – H9180 Mixed woodland on base-rich soils associated with rocky slopes – Control and reduce the impacts of atmospheric nitrogen pollution	
Option name	**Screening Assessment**	**Likely significant effect (LSE) alone?** / **If no LSE alone: Residual low-level effect requiring in-combination assessment**
Option P01_01: Charterhouse	This option is approximately 2.9km, east of Mendip Woodlands SAC. Option P01_01 will require low lift pumps from the Upper Springs to the treatment works and an extension of the treatment process for the additional 0.74 Ml/d. This option will use existing raw water mains from the Upper and Lower Springs, however there are some uncertainties if work to the water mains will be required. Potential impact pathways with regards to the qualifying feature of Mendip Woodlands SAC include 1) vehicles, 4) air pollution. **H9180 Tilio-Acerion forests of slopes, screes and ravines** Due to the distance between the option's location and Mendip Woodlands SAC (2.9km) and lack of hydrological connectivity the option P01_01 is not considered likely to result in impacts during construction works. The qualifying feature is not water dependant, and therefore the operation of the option while it may result in impacts on the groundwater levels, is not considered likely to result in impacts on Mendip Woodlands SAC. Therefore, no LSE from construction or operational activities, are anticipated and LSE can be ruled out at this stage. No residual impacts are anticipated upon the SAC, therefore no in-combination LSE are anticipated.	No / No
Option P01_02: Forum	This option is approximately 5.7km, west of Mendip Woodlands SAC. Option P01_02 would aim to improve the efficiency of treatment processes at the site so that more of the licensed volume can be treated and put into supply. Therefore this option will involve the maximisation of the yield from an existing operation source at Forum and would include the upgrade of the treatment processes within the site. No further infrastructure are deemed required at this stage. Potential impact pathways with regards to the qualifying feature of Mendip Woodlands SAC include 1) vehicles, 4) air pollution. **H9180 Tilio-Acerion forests of slopes, screes and ravines** Due to the distance between the option's location and Mendip Woodlands SAC (5.7km) and the lack of hydrological connectivity between the SAC and the option, R007 is not considered likely to result in impacts during construction works. The operation of the option could result in impacts on groundwater levels, however there is no hydrological connectivity between the SAC and the option and the qualifying feature is not considered water dependant. Therefore no LSE from construction and operation activities are anticipated from option R007 upon the habitat qualifying features of the SAC. No residual impacts are anticipated upon the SAC, therefore no in-combination LSE are anticipated.	No / No
Option R016: Huntspills transfer	This option is located approximately 0.8km south of the Mendip Woodlands SAC. Option R016 will involve the transfer of water from the Huntspill River/Kings Sedgemoor drain during the winter period to provide support to Cheddar Reservoir during dry winter periods. The option will require the construction of a 19km pipeline to Axbridge, upgrade of the infrastructures at Axbridge TW on an additional land and a short pipeline from Axbridge to Cheddar reservoir. Potential impact pathways with regards to the qualifying feature of Mendip Woodlands SAC include 1) vehicles, 4) air pollution. **H9180 Tilio-Acerion forests of slopes, screes and ravines** Due to the distance between the option's location and Mendip Woodlands SAC (0.8km), construction works may result in impacts on the SAC through surface water pollution incidents. The operation of the option will abstract water from stream and drains not hydrologically connected to the SAC and therefore no impacts	Yes / N/A

European Site name:	Mendip Woodlands SAC (UK0030048)		
	during operation are anticipated. Therefore LSE from construction activities, cannot be ruled out at this stage and further assessment will be required through a Stage 2 Appropriate Assessment.		
Option R24: Honeyhurst	This option is located approximately 0.9km west of Mendip Woodlands SAC. Option R24 will involve the refurbishment of Honeyhurst Well to bring it back into service and pump water from Honeyhurst to Cheddar WTW. This option would involve the construction of a new pumping station at the Honeyhurst site and a new 4.2km pipeline. There are no further requirements to upgrade Cheddar TW. Potential impact pathways with regards to the qualifying feature of Mendip Woodlands SAC include 1) vehicles, 4) air pollution. **H9180 Tilio-Acerion forests of slopes, screes and ravines** Due to the distance between the option's location and Mendip Woodlands SAC (0.9km) and due to the lack of hydrological connectivity, construction works is not anticipated to result in impacts upon the SAC. The operation of the option will abstract water from Honeyhurst and may have impacts to the groundwater levels. While the habitat is not considered water dependant, the minor discernible impacts to groundwater levels may result in impacts to the habitats and further assessment should be conducted. Therefore LSE from operational activities, cannot be ruled out at this stage and further assessment will be required through a Stage 2 Appropriate Assessment.	Yes	N/A
P06: Mendip Lakes	This option is located approximately 0.6km, south of Mendip Woodlands SAC (Cheddar Reservoir considered to be the closest location). Option P06 is to continue the established programme of catchment management to reduce nutrient loads. The programme involves the implementation of the catchment grant scheme to support farms to improve their infrastructure and reduce diffuse pollution risk. This option will not require construction works nor new water abstraction licence, however the yield benefit is estimated to be an average of 0.7Ml/d. Potential impact pathways with regards to the qualifying feature of Mendip Woodlands SAC include 1) vehicles, 4) air pollution. **H9180 Tilio-Acerion forests of slopes, screes and ravines** Due to the lack of construction works in relation to option P06, and due to the lack of hydrological connectivity between the SAC and the closest reservoir included in this option (Cheddar reservoir), option P06 is not anticipated to result in LSE during construction and operational activities, upon the habitat qualifying features of the SAC. No residual impacts are anticipated upon the SAC, therefore no in-combination LSE are anticipated.	No	No
R005: Cheddar Reservoir	This option is approximately 0.8km, west of Mendip Woodlands SAC. Option R005 is based on option Cheddar 2 as developed within WCN SRO. This option includes the construction of a second reservoir at Cheddar (capacity c.9000Ml so surface area of 868000m^2) with associated infrastructure and a new dedicated WTW. The reservoir would be filled alongside the existing reservoir and within the existing abstraction licence at Cheddar Springs and on the River Axe. Infrastructure required would include WTW, a 6.5km raw water main, a 48km potable water main and 6 pumping stations. Potential impact pathways with regards to the qualifying feature of Mendip Woodlands SAC include 1) vehicles, 4) air pollution. **H9180 Tilio-Acerion forests of slopes, screes and ravines** The footprint of the scheme falls outside of the SAC boundaries so there is no likelihood of direct habitat loss to designated habitats within the SAC. Due to the distance between the SAC and the scheme footprint impacts from air pollution are unlikely. The sites are not hydrologically connected via surface or groundwater, as the SAC is situated on a hill to the north of the scheme so any potential pollution incidences from the construction works would be very unlikely to impact the SAC. Best practice mitigation for construction works should still be followed. No LSE are anticipated to impact the SAC due to the distances between the sites. The operation of the scheme may involve increased abstraction from Cheddar springs but these will still be within the limits of the existing abstraction licence. Under the current licence it is anticipated that negatively affects to water dependent habitats are not likely.	No	No

North Somerset & Mendip Bats SAC

European Site name:	North Somerset and Mendip Bats SAC (UK0030052)	
Designation type: (SAC, SPA, Ramsar):	SAC	
Qualifying features:	**H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)** The Cheddar complex and Wookey Hole areas support a wide range of semi-natural habitats including semi-natural dry grasslands. The principal community present is CG2 *Festuca ovina – Avenula pratensis* grassland which occurs on rock ledges and on steep slopes with shallow limestone soil, especially in the dry valleys and gorges and on the south-facing scarp of the Mendips. The site is also important for the large number of rare plants which are associated with Carboniferous limestone habitats. These include dwarf mouse-ear *Cerastium pumilum*, Cheddar pink *Dianthus gratianopolitanus* and rock stonecrop *Sedum forsterianum*, which occur on rocks, screes, cliffs and in open grassland. Transitions to and mosaics with limestone heath, calcareous screes, scrub and 9180 *Tilio-Acerion* forests are a particular feature of the Cheddar complex part of the site. **H9180 *Tilio-Acerion* forests of slopes, screes and ravines** The main block of *Tilio-Acerion* forest at Kings and Urchin's Wood has developed over limestone which outcrops in parts of the site and forms a steep scarp to the south-east. Ash *Fraxinus excelsior* predominates in the canopy with small-leaved lime *Tilia cordata*, yew *Taxus baccata* and elm *Ulmus* spp., mostly formerly coppiced, but including some pollard limes. There is a rich ground flora including lily-of-the-valley *Convallaria majalis*, columbine *Aquilegia vulgaris*, angular Solomon's-seal *Polygonatum odoratum* and purple gromwell *Lithospermum purpureocaeruleum*. **H8310 Caves not open to the public** **S1303 Lesser horseshoe bat *Rhinolophus hipposideros*** The limestone caves of the Mendips provide a range of important hibernation sites for lesser horseshoe bat *Rhinolophus hipposideros* and 1304 greater horseshoe bat *Rhinolophus ferrumequinum*. **S1304 Greater horseshoe bat *Rhinolophus ferrumequinum*** This site in south-west England is selected on the basis of the size of population represented (3% of the UK greater horseshoe bat *Rhinolophus ferrumequinum* population) and its good conservation of structure and function, having both maternity and hibernation sites. This site contains an exceptionally good range of the sites used by the population, comprising two maternity sites in lowland north Somerset and a variety of cave and mine hibernation sites in the Mendip Hills.	**Water Dependent?** Yes – only H8310 Caves not open to the public.
Current conservation status (Article 17):	**H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)** **Overall assessment of conservation status:** Unfavourable-bad (range: favourable, area: unfavourable – inadequate, structure and function: unfavourable – bad, future prospects: unfavourable – bad). **Overall trend in conservation status**: Deteriorating **Main pressure and threats:** conversion into agricultural land, abandonment of grassland management, extensive grazing or undergrazing by livestock, application of synthetic fertilisers on agricultural land, agricultural activities generating diffuse pollution to surface or groundwaters, extraction of minerals, mixed source pollution to surface and ground waters, mixed source air pollution, air-borne pollutants, droughts and decreases in precipitation due to climate change, increases or changes in precipitation due to climate change. **H9180 Tilio-Acerion forests of slopes, screes and ravines** **Overall assessment of conservation status:** Unfavourable – bad (range – favourable; area – unfavourable – inadequate; specific structure and functions – unfavourable – bad; future prospects – unfavourable – bad) **Overall trend in conservation status**: Stable. **Main pressure and threats:** intensive grazing or overgrazing by livestock, problematic native species, plant and animal diseases, pathogens and pests, mixed source air pollution, air-borne pollutants. **H8310 Caves not open to the public** **Overall assessment of conservation status:** Favourable (range – favourable; area – favourable; specific structure and functions – unknown; future prospects – favourable) **Overall trend in conservation status**: Stable. **Main pressure and threats:** agricultural activities generating point source or diffuse pollution to surface or groundwaters, extraction of minerals, sports, tourism and leisure activities, deposition and treatment of waste and garbage from household and recreational facilities, mixed source pollution to surface and ground waters, abiotic natural processes. **S1303 Lesser horseshoe bat *Rhinolophus hipposideros*** **Overall assessment of conservation status:** Favourable (range – favourable; population – favourable; habitat for species – favourable; future prospects – favourable) **Overall trend in conservation status**: Improving. **Main pressure and threats:** removal of small landscape features for agricultural lands parcel consolidation, abandonment of grassland management, livestock farming, conversion to other types of forests including monocultures, logging without replanting or natural regrowth, extraction of minerals, roads, paths, railroads and related infrastructure, construction or modification in existing urban or recreational areas, sports, tourism or recreational activities. **S1304 Greater horseshoe bat *Rhinolophus ferrumequinum*** **Overall assessment of conservation status:** Favourable (range – favourable; population – favourable; habitat for species – favourable; future prospects – favourable) **Overall trend in conservation status**: Improving. **Main pressure and threats:** removal of small landscape features for agricultural lands parcel consolidation, abandonment of grassland management, livestock farming, logging without replanting or natural regrowth, extraction of minerals, roads, paths, railroads and related infrastructure, construction or modification in existing urban or recreational areas, sports, tourism or recreational activities, reduced fecundity/genetic depression, other natural catastrophes.	
Conservation objectives:	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; • The extent and distribution of qualifying natural habitats and habitats of qualifying species • The structure and function (including typical species) of qualifying natural habitats • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site	
SSSI condition assessment:	Banwell Caves SSSI: favourable 100% Banwell Ochre Caves SSSI: unfavourable- no change 100% Brockley Hall Stables SSSI: favourable 100%	

European Site name:	North Somerset and Mendip Bats SAC (UK0030052)		
	Compton Martin Ochre Mine SSSI: unfavourable- no change 100% King's Wood and Urchin Wood SSSI: unfavourable- recovering 80.08%, unfavourable- declining 19.92% The Cheddar Complex SSSI: favourable 54.33%, unfavourable- recovering 45.67% Wookey Hole SSSI: favourable 100%		
Site Improvement Plan (only threats and actions relevant to the WRMP):	• Undergrazing – Pressure/ threat – H6210 Dry grasslands and scrublands on chalk or limestone (important orchid sites) – Advice and grants to landowners and managers, research and public engagement • Planning permission: general – Pressure/ threat – S1303 Lesser horseshoe bat, S1304 Greater horseshoe bat -Planning guidance and advice • Change to site conditions – Pressure/ threat – S1303 Lesser horseshoe bat, S1304 Greater horseshoe bat – Investigate mine stability and stabilisation solutions • Forestry and woodland management – Pressure – H9180 Mixed woodland on base-rich soils associated with rocky slopes – Control sycamore • Disease – Threat – H9180 Mixed woodland on base-rich soils associated with rocky slopes, S1303 Lesser horseshoe bat – Monitor Ash dieback • Air pollution: impact of atmospheric nitrogen deposition – Pressure – H6210 Dry grasslands and scrublands on chalk or limestone (important orchid sites), H9180 Mixed woodland on base-rich soils associated with rocky slopes, S1303 Lesser horseshoe bat, S1304 Greater horseshoe bat – Investigate potential atmospheric nitrogen impacts on the site		
Option name	**Screening Assessment**	**Likely significant effect (LSE) alone?**	**If no LSE alone: Residual low-level effect requiring in-combination assessment**
Option P01_01: Charterhouse	This option is directly adjacent to North Somerset and Mendip Bats SAC. Option P01_01 will require low lift pumps from the Upper Springs to the treatment works and an extension of the treatment process for the additional 0.74 Ml/d. This option will use existing raw water mains from the Upper and Lower Springs, however there are some uncertainties if work to the water mains will be required. Potential impact pathways with regards to the qualifying features of North Somerset and Mendip Bats SAC include 2) planning permission, 3) changes to site conditions and 6) air pollution. **H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*), H9180 Tilio-Acerion forests of slopes, screes and ravines and H8310 Caves not open to the public** Due to the distance between the option's location and North Somerset and Mendip Bats (directly adjacent), option P01_01 is considered likely to result in impacts during construction works through loss/damage to supporting habitats (if present), air pollution, dust, surface and ground water pollution incidents. The operation of the option could result in impacts on groundwater levels, which may have impacts on the water dependent habitat qualifying features of the SAC; H8310 Caves not open to the public. Therefore LSE from construction and operation activities cannot be ruled out at this stage and further assessments are required through a Stage 2 Appropriate Assessment.	Yes	N/A
	S1303 Lesser horseshoe bat *Rhinolophus hipposideros* and S1304 Greater horseshoe bat *Rhinolophus ferrumequinum* As per the Supplementary Advice for North Somerset and Mendip Bats SAC , '*Greater horseshoes tend to forage within 2.5km of their summer roost, though they can travel up to 4km from these roosts to suitable foraging grounds (Schofield, 2008). Within the winter, their foraging range is reduced, with a mean foraging radius of 1.2 km around hibernation sites reported.)*' and '*Lesser horseshoes tend to forage 2-3km of their roost, though they can travel up to 4km from their roosts to suitable foraging grounds'*. Option P01_01 is located within the Bat Consultation Zone (Band A and B) as defined in the North Somerset and Mendip Bats SAC Guidance on Development: Supplementary Planning Document (2018). However, option P01_01 is not located within the Juvenile Sustenance Zone. Due to the distance between the option's location and North Somerset and Mendip Bats (directly adjacent), option P01_01 is considered likely to result in impacts during construction on lesser and greater horseshoe through habitat loss/damage (foraging, commuting and roosting habitat), killing/injuring individual, light spills, noise, vibration, air pollution, dust, surface and groundwater pollution incidents. Furthermore, the operation of the option could result in impacts on groundwater levels and therefore the potential impacts on GWDTE within the North Somerset and Mendip Bats SAC and supporting foraging habitats needs further considerations. Therefore LSE from construction and operational activities, cannot be ruled out at this stage and further assessment will be required through a Stage 2 Appropriate Assessment.	Yes	N/A
Option P01_02: Forum	This option is approximately 8.2km, south-east of North Somerset & Mendip Bats SAC. Option P01_02 would aim to improve the efficiency of treatment processes at the site so that more of the licensed volume can be treated and put into supply. Therefore this option will involve the maximisation of the yield from an existing operation source at Forum and would include the upgrade of the treatment processes within the site. No further infrastructure are deemed required at this stage. Potential impact pathways with regards to the qualifying features of North Somerset and Mendip Bats SAC include 2) planning permission, 3) changes to site conditions and 6) air pollution. **H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*), H9180 Tilio-Acerion forests of slopes, screes and ravines and H8310 Caves not open to the public** Due to the distance between the option's location and North Somerset and Mendip Bats (8.2km) and the lack of hydrological connectivity between the SAC and the option, construction works is not considered likely to result in impacts. The operation of the option could result in impacts on groundwater levels, however due to the distance, the lack of new water abstraction required and the small amount of additional water to be treated, the option is not considered to result in impacts to the SAC. Therefore no LSE from construction and operation activities are anticipated from option R005 upon the habitat qualifying features of the SAC. No residual impacts are anticipated upon the SAC, therefore no in-combination LSE are anticipated.	No	No
	S1303 Lesser horseshoe bat *Rhinolophus hipposideros* and S1304 Greater horseshoe bat *Rhinolophus ferrumequinum* As per the Supplementary Advice for North Somerset and Mendip Bats SAC, '*Greater horseshoes tend to forage within 2.5km of their summer roost, though they can travel up to 4km from these roosts to suitable foraging grounds (Schofield, 2008). Within the winter, their foraging range is reduced, with a mean foraging radius of 1.2 km around hibernation sites reported.)*' and '*Lesser horseshoes tend to forage 2-3km of their roost, though they can travel up to 4km from their roosts to suitable foraging grounds*'. Further, option P01_02 is not located within the Juvenile Sustenance Zone nor within the Bat Consultation Zone as defined in the North Somerset and Mendip Bats SAC Guidance on Development: Supplementary Planning Document (2018).	Yes	N/A

European Site name:	North Somerset and Mendip Bats SAC (UK0030052)		
	Due to the distance between the option and North Somerset and Mendip Bats (8.2km), option P01_02 is not considered likely to result in impacts during construction works upon the qualifying feature. However, the operation of the option could result in impacts on groundwater levels and therefore the potential impacts on GWDTE within the North Somerset and Mendip Bats SAC and supporting foraging habitats needs further considerations. Therefore LSE from operational activities, cannot be ruled out at this stage and further assessment will be required through a Stage 2 Appropriate Assessment.		
Option R016: Huntspill Transfer	This option is located approximately 2.8km west of the North Somerset and Mendip Bats. Option R016 will involve the transfer of water from the Huntspill River/Kings Sedgemoor drain during the winter period to provide support to Cheddar Reservoir during dry winter periods. The option will require the construction of a 19km pipeline to Axbridge, upgrade of the infrastructures at Axbridge TW on an additional land and a short pipeline from Axbridge to Cheddar reservoir. Potential impact pathways with regards to the qualifying features of North Somerset and Mendip Bats SAC include 2) planning permission, 3) changes to site conditions and 6) air pollution. **H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*), H9180 Tilio-Acerion forests of slopes, screes and ravines and H8310 Caves not open to the public** Due to the distance between the option's location and North Somerset and Mendip Bats (2.8km) and the lack of hydrological connectivity between the SAC and the option, construction works are not considered likely to result in impacts upon the SAC. The operation of the option will abstract water from stream and drains not hydrologically connected to the SAC and therefore no impacts during operation are anticipated. Therefore no LSE from construction and operation activities are anticipated from option R016 upon the habitat qualifying features of the SAC. No residual impacts are anticipated upon the SAC, therefore no in-combination LSE are anticipated.	No	No
	S1303 Lesser horseshoe bat *Rhinolophus hipposideros* and S1304 Greater horseshoe bat *Rhinolophus ferrumequinum* As per the Supplementary Advice for North Somerset and Mendip Bats SAC, '*Greater horseshoes tend to forage within 2.5km of their summer roost, though they can travel up to 4km from these roosts to suitable foraging grounds (Schofield, 2008). Within the winter, their foraging range is reduced, with a mean foraging radius of 1.2 km around hibernation sites reported.*)' and '*Lesser horseshoes tend to forage 2-3km of their roost, though they can travel up to 4km from their roosts to suitable foraging grounds*'. Option R016 is located within the Bat Consultation Zone (Band B and C) as defined in the North Somerset and Mendip Bats SAC Guidance on Development: Supplementary Planning Document (2018). However, option R016 is not located within the Juvenile Sustenance Zone. Due to the distance between the option and North Somerset and Mendip Bats (2.8km), R016 is considered likely to result in impacts during construction works. The operation of the option will abstract water from stream and drains not hydrologically connected to the SAC, and located approximately 15km from the SAC, therefore no impacts during operation are anticipated. Therefore LSE from construction activities, cannot be ruled out at this stage and further assessment will be required.	Yes	N/A
Option R24: Honeyhurst	This option is located approximately 0.9km west of the North Somerset and Mendip Bats. Option R24 will involve the refurbishment of Honeyhurst Well to bring it back into service and pump water from Honeyhurst to Cheddar WTW. This option would involve the construction of a new pumping station at the Honeyhurst site and a new 4.2km pipeline. There are no further requirements to upgrade Cheddar TW. Potential impact pathways with regards to the qualifying features of North Somerset and Mendip Bats SAC include 2) planning permission, 3) changes to site conditions and 6) air pollution. **H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*), H9180 Tilio-Acerion forests of slopes, screes and ravines and H8310 Caves not open to the public** Due to the distance between the option's location and North Somerset and Mendip Bats (0.9km) and the lack of hydrological connectivity between the SAC and the option, construction works are not considered likely to result in impacts upon the SAC. The operation of the option will abstract water at Honeyhurst which may result in minor discernible changes to the groundwater levels and have impacts on the habitats of the SAC as well as supporting habitats. Therefore, LSE from operational activities cannot be ruled out and further assessments are required through a Stage 2 Appropriate Assessment.	Yes	N/A
	S1303 Lesser horseshoe bat *Rhinolophus hipposideros* and S1304 Greater horseshoe bat *Rhinolophus ferrumequinum* As per the Supplementary Advice for North Somerset and Mendip Bats SAC, '*Greater horseshoes tend to forage within 2.5km of their summer roost, though they can travel up to 4km from these roosts to suitable foraging grounds (Schofield, 2008). Within the winter, their foraging range is reduced, with a mean foraging radius of 1.2 km around hibernation sites reported.*)' and '*Lesser horseshoes tend to forage 2-3km of their roost, though they can travel up to 4km from their roosts to suitable foraging grounds*'. Option R24 is located within the Bat Consultation Zone (Band , B and C) as defined in the North Somerset and Mendip Bats SAC Guidance on Development: Supplementary Planning Document (2018). However, option R24 is not located within the Juvenile Sustenance Zone. Due to the distance between the option and North Somerset and Mendip Bats (0.9km), R24 is considered likely to result in impacts during construction works. The operation of the option will abstract water from Honeyhurst which may result in minor discernible changes to the groundwater levels and have impacts on supporting habitats for the bat population. Therefore, LSE from construction and operational activities cannot be ruled out and further assessments are required.	Yes	N/A
Option P06: Mendip Lakes	This option is located approximately 1.8km, west of North Somerset and Mendip Bats SAC (Cheddar Reservoir considered to be the closest location). Option P06 is to continue the established programme of catchment management to reduce nutrient loads. The programme involves the implementation of the catchment grant scheme to support farms to improve their infrastructure and reduce diffuse pollution risk. This option will not require construction works nor new water abstraction licence, however the yield benefit is estimated to be an average of 0.7Ml/d. Potential impact pathways with regards to the qualifying features of North Somerset and Mendip Bats SAC include 2) planning permission, 3) changes to site conditions and 6) air pollution.	No	Yes

European Site name:	North Somerset and Mendip Bats SAC (UK0030052)		
	H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*), H9180 Tilio-Acerion forests of slopes, screes and ravines and H8310 Caves not open to the public Due to the lack of construction works in relation to option P06, no LSE are anticipated from construction activities. Due to the lack of hydrological connectivity between Cheddar Reservoir, Chew Reservoir and North Somerset and Mendip Bats SAC, operational activities which may result in greater water abstraction are not considered to have an impact on the SAC. Due to the hydrological connectivity between Blagdon Reservoir and North Somerset and Mendip Bats SAC, greater water abstraction may result in minor effects on the habitats of the SAC. However, as per the WFD assessment, it is considered that such minor additional water abstraction (yield benefit of 0.7Ml/d to be distributed between the three reservoirs) is considered compliant with the WFD and therefore is not considered likely to result in changes to hydrology of the downstream water body (Congresbury Yeo) which may be hydrologically connected to North Somerset and Mendip Bats SAC. Therefore no LSE from construction and operation activities are anticipated from option P06 upon the habitat qualifying features of the SAC.		
	S1303 Lesser horseshoe bat *Rhinolophus hipposideros* and S1304 Greater horseshoe bat *Rhinolophus ferrumequinum* As per the Supplementary Advice for North Somerset and Mendip Bats SAC, '*Greater horseshoes tend to forage within 2.5km of their summer roost, though they can travel up to 4km from these roosts to suitable foraging grounds (Schofield, 2008). Within the winter, their foraging range is reduced, with a mean foraging radius of 1.2 km around hibernation sites reported.)*' and '*Lesser horseshoes tend to forage 2-3km of their roost, though they can travel up to 4km from their roosts to suitable foraging grounds'*. Option P06 is located within the Bat Consultation Zone (Band B and C) as defined in the North Somerset and Mendip Bats SAC Guidance on Development: Supplementary Planning Document (2018). However, option P06 is not located within the Juvenile Sustenance Zone. Due to the lack of construction works in relation to option P06, no LSE are anticipated from construction activities. Operational activities will result in additional water abstraction, however due to the lack of hydrological connectivity with downstream waterbodies and downstream supporting habitats, additional abstractions at Cheddar Reservoir (located within Bat Consultation Zone) and Chew Reservoir are not considered likely to result in LSE on supporting habitats for the bat populations. Due to the hydrological connectivity between Blagdon Reservoir and North Somerset and Mendip Bats SAC or its supporting habitats, greater water abstraction may result in minor effects on the habitats of the SAC. However, as per the WFD assessment, it is considered that such minor additional water abstraction (yield benefit of 0.7Ml/d to be distributed between the three reservoirs) is compliant with the WFD and therefore is not considered likely to result in changes to hydrology of the downstream water body (Congresbury Yeo). Therefore no LSE from construction and operation activities are anticipated from option P06 upon the habitat qualifying features of the SAC.	No	Yes
Option R005: Cheddar Reservoir	This option is approximately 40m, north of North Somerset and Mendip Bats SAC. Option R005 is based on option Cheddar 2 as developed within WCN SRO. This option includes the construction of a second reservoir at Cheddar (capacity c.9000Ml so surface area of 868000m^2) with associated infrastructure and a new dedicated WTW. The reservoir would be filled alongside the existing reservoir and within the existing abstraction licence at Cheddar Springs and on the River Axe. Infrastructure required would include WTW, a 6.5km raw water main, a 48km potable water main and 6 pumping stations. Potential impact pathways with regards to the qualifying features of North Somerset and Mendip Bats SAC include 2) planning permission, 3) changes to site conditions and 6) air pollution. **H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*), H9180 Tilio-Acerion forests of slopes, screes and ravines and H8310 Caves not open to the public** The footprint of the scheme falls outside of the SAC boundaries so there is no likelihood of direct habitat loss to designated habitats within the SAC. Possible impacts from the construction of the scheme may come from potential exposure to air pollution due to increased traffic from construction vehicles (particularly if access gained via the B3135 which runs through the North Somerset and Mendip Bats SAC). Mitigation measures would be required during construction to prevent any LSE. No LSE are anticipated to impact the SAC from the operation of the scheme as any increase in abstraction from Cheddar springs will be within the limits of the existing abstraction licence. Under the current licence it is anticipated that negatively affects to water dependent habitats are not likely.	Yes	N/A
	S1303 Lesser horseshoe bat *Rhinolophus hipposideros* and S1304 Greater horseshoe bat *Rhinolophus ferrumequinum* As per the Supplementary Advice for North Somerset and Mendip Bats SAC, '*Greater horseshoes tend to forage within 2.5km of their summer roost, though they can travel up to 4km from these roosts to suitable foraging grounds (Schofield, 2008). Within the winter, their foraging range is reduced, with a mean foraging radius of 1.2 km around hibernation sites reported.)*' and '*Lesser horseshoes tend to forage 2-3km of their roost, though they can travel up to 4km from their roosts to suitable foraging grounds'*. Option R005 is located within the Bat Consultation Zone (Band A, B and C) as defined in the North Somerset and Mendip Bats SAC Guidance on Development: Supplementary Planning Document (2018) [37], option R005 is also located within the Juvenile Sustenance Zone. The footprint of the scheme falls outside of the SAC boundaries so direct disturbance of brooding and nesting sites is unlikely during the construction and operation of the scheme. It is possible during the construction of the scheme that building activities at night-time, for example bright lighting and the increase of construction traffic could disturb these species. Other impacts may occur if the removal of trees, hedgerows or other features used by the species for commuting and feeding occurs. According to Mendip council's guidance on bats parts of the scheme fall within all three consultation zones, meaning surveys may be required if it cannot be clearly demonstrated that the scheme can be mitigated or will have no impact on the two bat species. Terrestrial foraging habitat (broadleaved woodland, hedges) may be affected by the creation of the new reservoir. The changes to the functioning of the ditch network, and availability of water, across the wider area is uncertain. This could result in a change in condition of offsite functionally linked foraging habitat during operation of the option. Further assessment is required through a Stage 2 Appropriate Assessment for both the construction and operation phases.	Yes	N/A

[37] Mendip District Council (2019) Mells Valley Special Area of Conservation (SAC), North Somerset and Mendip Bats SAC, Bath and Bradford on Avon Bats SAC, Guidance for Development. URL https://www.mendip.gov.uk/media/22423/Technical-Guidance-Mendip-District-SAC-Bats-v2-1/pdf/Technical_Guidance_Mendip_District_SAC_Bats_v2.1_a2.pdf?m=637484770030800000

River Wye SAC

European Site name:	River Wye SAC (UK0012642)	
Designation type: (SAC, SPA, Ramsar):	SAC	
Qualifying features:	**3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation** The Wye, on the border of England and Wales, is a large river representative of sub-type 2. It has a geologically mixed catchment, including shales and sandstones, and there is a clear transition between the upland reaches, with characteristic bryophyte-dominated vegetation, and the lower reaches, with extensive *Ranunculus* beds. There is a varied water-crowfoot *Ranunculus* flora; stream water-crowfoot *R. penicillatus ssp. Pseudofluitans* is abundant, with other Ranunculus species – including the uncommon river water-crowfoot *R. fluitans* – found locally. Other species characteristic of sub-type 2 include flowering-rush *Butomus umbellatus*, lesser water-parsnip *Berula erecta* and curled pondweed *Potamogeton crispus*. There is an exceptional range of aquatic flora in the catchment including river jelly-lichen *Collema dichotum*. The river channel is largely unmodified and includes some excellent gorges, as well as significant areas of associated woodland. **7140 Transition mires and quaking bogs** **1092 White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*** The Welsh River Wye system is the best site known in Wales for white-clawed crayfish. The tributaries are the main haven for the species, particularly at the confluences of the main river and the Edw, Dulas Brook, Sgithwen and Clettwr Brook. **1095 Sea lamprey *Petromyzon marinus*** The sea lamprey population within the Wye is found in the main stem below Llyswen. The site provides exceptionally good quality habitat for sea lamprey and supports a healthy population. **1096 Brook lamprey *Lampetra planeri*** The brook lamprey population is widely distributed in the Wye catchment. The river provides exceptionally good quality habitat for brook lamprey and supports a healthy population. **1099 River lamprey *Lampetra fluviatilis*** The river lamprey population is widely distributed in the Wye catchment. The Wye provides exceptionally good quality habitat for river lamprey and supports a healthy population. **1103 Twaite shad *Alosa fallax*** Twaite shad have long been abundant in the Wye. Twaite shad often spawn at or just above the tidal limit, but in the Wye, they migrate over 100 km upstream, the highest spawning site being at Builth Wells. Data held by the Environment Agency indicate that, of the three selected rivers, the largest spawning areas for this species occur on the Wye. The river has relatively good water quality, adequate flows through an unobstructed main channel and a wide range of aquatic habitats conducive to supporting this fish species. In particular, there are a number of deep pools essential for congregation before spawning. **1106 Atlantic salmon *Salmo salar*** Historically, the Wye is the most famous and productive river in Wales for Atlantic salmon Salmo salar, with high-quality spawning grounds and juvenile habitat in both the main channel and tributaries; water quality in the system is generally favourable. It is also one of the most diverse river systems in the UK, with a transition from hard geology, high gradients, rapid flow fluctuations and low nutrient-content in its upper reaches, to a more nutrient-rich river with lower gradient, more stable flow and softer geology in the lowlands. The effect of river engineering work on migration and spawning has been limited, although there is a localised influence from the Elan Valley reservoirs, through inundation of spawning and nursery habitat and fluctuations in flow and water levels in the upper Wye. The most important tributaries for spawning are included in the SAC. Although in the past non-native salmon may have been released to the system, the impact of this is likely to have been minimal. The Wye salmon population is particularly notable for the very high proportion (around 75%) of multi sea winter (MSW) fish, a stock component which has declined sharply in recent years throughout the UK. This pattern has also occurred in the Wye, with a consequent marked decline in the population since the 1980s. However, the Wye salmon population is still of considerable importance in UK terms. **1163 Bullhead *Cottus gobio*** The Wye supports bullhead in the extensive river system. The diversity of habitat types in the Wye means that it is likely to represent most of the habitat conditions in which bullhead occurs in Britain, highlighting the conservation importance of this river. **1355 Otter *Lutra lutra*** The Wye holds the densest and most well-established otter population in Wales, representative of otters occurring in lowland freshwater habitats in the borders of Wales. The river has bank-side vegetation cover, abundant food supply, clean water and undisturbed areas of dense scrub suitable for breeding, making it particularly favourable as otter habitat. The population remained even during the lowest point of the UK decline, confirming that the site is particularly favourable for this species and the population likely to be highly stable. **1102 Allis shad *Alosa alosa*** **3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation**	**Water Dependent?** Yes
Current conservation status (Article 17):	**3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation** **Overall assessment of conservation status:** Unfavourable – Bad: (range: favourable, area: unfavourable – inadequate, specific structure and functions: unfavourable – bad, future prospects: unfavourable – inadequate). **Overall trend in conservation status**: Improving. **Main pressure and threats**: forestry activities generating pollution to surface or ground waters; hydropower; invasive alien species; mixed source pollution to surface and ground waters; modification of hydrological flow; physical alteration of water bodies; temperature changes due to climate change; drought and decrease in precipitation due to climate change; increases or changes in precipitation due to climate change. **7140 Transition mires and quaking bogs** **Overall assessment of conservation status:** Unfavourable – Bad: (range: favourable, area: unknown, specific structure and functions: unfavourable – bad, future prospects: unfavourable – bad). **Overall trend in conservation status**: Stable.	

European Site name:	River Wye SAC (UK0012642)
	Main pressure and threats: intensive grazing or overgrazing by livestock; extensive grazing or undergrazing by livestock; modification of hydrological conditions or physical alteration of water bodies and drainage for forestry; problematic native species; mixed source pollution to surface and ground waters; mixed source air pollution; drainage; increase or changes in precipitation due to climate change. **1092 White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*** **Overall assessment of conservation status:** Unfavourable – Bad: (range: unfavourable – bad, population: unfavourable – bad, habitat for the species: favourable, future prospects: unfavourable – bad). **Overall trend in conservation status**: Deteriorating. **Main pressure and threats**: freshwater fish and shellfish harvesting; introduction and spread of species in freshwater aquaculture; invasive alien species; drainage; modification of hydrological flow; physical alteration of water bodies; interspecific relations; change of habitat location/size/quality due to climate change. **1095 Sea lamprey *Petromyzon marinus*** **Overall assessment of conservation status:** Unknown (range: favourable, population: unknown, habitat for the species: unknown, future prospects: unknown). **Overall trend in conservation status**: Unknown. **Main pressure and threats**: Modification of hydrological flow; physical alteration of water bodies; drought and decrease in precipitation due to climate change; change of habitat location/size/quality due to climate change; point source and diffuse pollution generated by agricultural and forestry activities; hydropower; discharge of urban waste water. **1096 Brook lamprey *Lampetra planeri*** **Overall assessment of conservation status:** Unknown (range: favourable, population: unknown, habitat for the species: unknown, future prospects: unknown). **Overall trend in conservation status**: Unknown. **Main pressure and threats**: point source and diffuse pollution generated by agricultural activities; hydropower; mixed source pollution to surface and ground waters; modification of hydrological flow; physical alteration of water bodies; droughts and decrease in precipitation due to climate change; change of habitat location/size/quality due to climate change; invasive alien species. **1099 River lamprey *Lampetra fluviatilis*** **Overall assessment of conservation status:** Favourable (range: favourable, population: favourable, habitat for the species: unknown, future prospects: favourable). **Overall trend in conservation status**: Unknown. **Main pressure and threats**: point source and diffuse pollution generated by agricultural activities; hydropower; discharge of urban waste water; mixed source pollution to surface and ground waters; drainage; development and operation of dams; modification of hydrological flow; physical alteration of water bodies; change of habitat location/size/quality due to climate change; invasive alien species. **1103 Twaite shad *Alosa fallax*** **Overall assessment of conservation status:** Unfavourable – inadequate (range: unfavourable – inadequate, population: unfavourable – inadequate, habitat for the species: unfavourable – inadequate, future prospects: unfavourable – inadequate). **Overall trend in conservation status**: Stable. **Main pressure and threats**: hydropower; marine fish and shellfish harvesting; invasive alien species; mixed source pollution to surface and ground waters; drainage; modification of hydrological flow; physical alteration of water bodies; abstraction of surface and ground water for energy production; climate related changes in abiotic conditions. **1106 Atlantic salmon *Salmo salar*** **Overall assessment of conservation status:** Unfavourable – inadequate (range: favourable, population: unfavourable – inadequate, habitat for the species: favourable, future prospects: unfavourable – inadequate). **Overall trend in conservation status**: Stable. **Main pressure and threats**: point source and diffuse pollution generated by agricultural and forestry activities; management of fishing stocks; introduction and spread of species in freshwater and marine aquaculture; physical alteration of water bodies; impact from climate change on temperature, precipitation and biological/ecological processes (desynchronisation). **1163 Bullhead *Cottus gobio*** **Overall assessment of conservation status:** Favourable (range: favourable, population: favourable, habitat for the species: unknown, future prospects: favourable). **Overall trend in conservation status**: Stable. **Main pressure and threats**: physical alteration of water bodies; climate related changes in abiotic conditions; hydropower; freshwater fish and shellfish harvesting; problematic native species; invasive species; mixed source pollution to surface and ground waters; modification of hydrological flow. **1355 Otter *Lutra lutra*** **Overall assessment of conservation status:** Favourable (range: favourable, population: favourable, habitat for the species: favourable, future prospects: favourable). **Overall trend in conservation status**: Stable. **Main pressure and threats**: modification of hydrological flow; roads, paths, railroads and related infrastructure; illegal shooting/killing; bycatch and incidental killing; mixed source pollution to surface and ground waters, and to marine water; use of plant protection chemical in agriculture; abstraction from groundwater, surface water and mixed water. **1102 Allis shad *Alosa alosa*** **Overall assessment of conservation status:** Unfavourable – inadequate (range: unfavourable – inadequate, population: unfavourable – inadequate, habitat for the species: unfavourable – inadequate, future prospects: unfavourable – inadequate). **Overall trend in conservation status**: Stable. **Main pressure and threats**: hydropower; marine fish and shellfish harvesting; invasive alien species; mixed source pollution to surface and ground waters; modification of hydrological flow; physical alteration of water bodies; wind/wave/tidal power; abstraction of surface and ground water for energy production; climate related changes in abiotic conditions.
Conservation objectives:	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: • The extent and distribution of qualifying natural habitats and habitats of qualifying species, • The structure and function (including typical species) of qualifying natural habitats,

European Site name:	River Wye SAC (UK0012642)		
	• The structure and function of the habitats of qualifying species, • The supporting processes on which qualifying natural habitats and habitats of qualifying species rely, • The populations of qualifying species, and, • The distribution of qualifying species within the site.		
SSSI condition assessment:	Upper Wye Gorge SSSI: 29.41% favourable; 70.59% unfavourable – recovering. River Wye SSSI: 12.69% favourable; 87.31% unfavourable – recovering. River Lugg SSSI: 74.53% unfavourable – recovering; 25.47% unfavourable – declining.		
Site Improvement Plan (only threats and actions relevant to the WRMP):	• Water pollution: reduce the inputs of sediments, nutrients and other pollutants and follow Defra's Codes of Good Practice: H3260 Rivers with floating vegetation often dominated by watercrowfoot, S1092 White-clawed (or Atlantic stream) crayfish, S1095 Sea lamprey, S1096 Brook lamprey, S1099 River lamprey, S1102 Allis shad, S1103 Twaite shad, S1106 Atlantic salmon, S1163 Bullhead, S1355 Otter. • Physical modification: implement the River Restoration Plans: H3260 Rivers with floating vegetation often dominated by watercrowfoot, S1095 Sea lamprey, S1096 Brook lamprey, S1099 River lamprey, S1102 Allis shad, S1103 Twaite shad, S1106 Atlantic salmon, S1163 Bullhead, S1355 Otter. • Invasive species: Reduce and contain invasive non-native species: H3260 Rivers with floating vegetation often dominated by watercrowfoot, S1092 White-clawed (or Atlantic stream) crayfish, S1102 Allis shad, S1103 Twaite shad • Hydrological changes: Promote sensitive catchment management and sustainable drainage systems: H3260 Rivers with floating vegetation often dominated by watercrowfoot, S1092 White-clawed (or Atlantic stream) crayfish, S1095 Sea lamprey, S1096 Brook lamprey, S1099 River lamprey, S1102 Allis shad, S1103 Twaite shad, S1106 Atlantic salmon, S1163 Bullhead, S1355 Otter. • Water abstraction: Improve the resilience of the river's water resources through mitigation and adaptation measures in drought plans: S1092 White-clawed (or Atlantic stream) crayfish, S1095 Sea lamprey, S1096 Brook lamprey, S1099 River lamprey, S1102 Allis shad, S1103 Twaite shad, S1106 Atlantic salmon, S1163 Bullhead, S1355 Otter. • Air pollution: impact of atmospheric nitrogen deposition: H7140 Very wet mires often identified by an unstable `quaking` surface.		
Option name	**Screening Assessment**	**Likely significant effect (LSE) alone?**	**If no LSE alone: Residual low-level effect requiring in-combination assessment**
Option R08_03: Frome at Frenchay	This option is located approximately 6km, south-east of River Wye SAC. Option R08_03 involves the development of a new supply source on the Bristol Frome at Frenchay. Water abstracted and pumped to Littleton WTW for treatment and distribution. This option would require a new pumping station at the abstraction site and a 13.2km pipeline. No further upgrades at Littleton WTW will be required. Potential impact pathways with regards to the qualifying feature of River Wye SAC include 1) water pollution, 2) physical modification, 3) invasive species, 4) hydrological changes, 5) water abstraction and 6) air pollution. **3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation and 7140 Transition mires and quaking bogs.** **1092 White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes,* 1095 Sea lamprey *Petromyzon marinus,* 1096 Brook lamprey *Lampetra planeri,* 1099 River lamprey *Lampetra fluviatilis',* 1103 Twaite shad *Alosa fallax,* 1106 Atlantic salmon *Salmo salar,* 1163 Bullhead *Cottus gobio,* 1355 Otter *Lutra lutra*** and **1102 Allis shad *Alosa alosa*** Due to the distance between the option and the SAC and due to the lack of hydrological connectivity (the option is not located within the same catchment of the River Wye), construction works is not anticipated to result in impacts upon the SAC. The operation of the option may result in impacts to the groundwater level and water flows into the Severn Estuary of which the River Wye is a tributary. However, due to the location of the option and the among of water to be abstracted, no impacts from operation are anticipated upon the River Wye SAC. Therefore, no LSE from construction and operational activities are anticipated and further assessment is not required. No residual impacts are anticipated upon the SAC, therefore no in-combination LSE are anticipated.	No	No
Option R014: Avonmouth WWTW Direct Effluent Reuse	This option is approximately 4.4km, south-east of River Wye SAC. Option R014 will require the treated effluent (~10Ml/d) to be taken from Wessex Water's Avonmouth Wastewater Treatment Works (WWTW) for further treatment, and put into supply at Littleton TW. The option will require the construction of a new pipe of 6.4km, from Avonmouth WWTW to connect to existing raw main. No new water abstraction licence would be required. Potential impact pathways with regards to the qualifying feature of River Wye SAC include 1) water pollution, 2) physical modification, 3) invasive species, 4) hydrological changes, 5) water abstraction and 6) air pollution. **3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation and 7140 Transition mires and quaking bogs.** **1092 White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes,* 1095 Sea lamprey *Petromyzon marinus,* 1096 Brook lamprey *Lampetra planeri,* 1099 River lamprey *Lampetra fluviatilis',* 1103 Twaite shad *Alosa fallax,* 1106 Atlantic salmon *Salmo salar,* 1163 Bullhead *Cottus gobio,* 1355 Otter *Lutra lutra*** and **1102 Allis shad *Alosa alosa*** Due to the distance between the option and the SAC and due to the lack of hydrological connectivity (the option is not located within the same catchment of the River Wye), construction works is not anticipated to result in impacts upon the SAC. The operation of the option does not require new water abstraction, however there will be a reduction in volume of effluent that enters the Severn Estuary. This is considered negligible in the context of the estuary. Avonmouth WWTW is located c.8km downstream of the mouth of the River Wye, however changes in the wastestream (chemical composition, salinity, pH, temperature etc) as a result in the reduction in final effluent and reverse osmosis need to be considered in terms of potential deterioration of offsite habitats used by the migratory fish species (e.g. Atlantic salmon, sea lamprey) within the Severn Estuary and potential changes to olfactory cues. A Stage 2 Appropriate Assessment is therefore required to consider the migratory fish species. Therefore LSE cannot be ruled out at this stage and further assessment are required with regards to supporting habitats.	Yes	N/A

River Avon SAC

European Site name:	**River Avon SAC (UK0013016)**	
Designation type: (SAC, SPA, Ramsar):	SAC	
Qualifying features:	**3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation** The Avon in southern England is a large, lowland river system that includes sections running through chalk and clay, with transitions between the two. Five aquatic *Ranunculus* species occur in the river system, but stream water-crowfoot *Ranunculus penicillatus* ssp. *Pseudofluitans* and river water-crowfoot *R. fluitans* are the main dominants. Some winterbourne reaches, where *R. peltatus* is the dominant water-crowfoot species, are included in the SAC. **S1016 Desmoulin`s whorl snail *Vertigo moulinsiana*** There is an extensive population of Desmoulin's whorl snail *Vertigo moulinsiana* along about 20 km of the margins and associated wetlands of the Rivers Avon, Bourne and Wylye. This is one of two sites representing the species in the south-western part of its range, in chalk stream habitat. It occurs here in a separate catchment from the Kennet and Lambourn, within an environment more heavily dominated by arable agriculture. **S1095 Sea lamprey *Petromyzon marinus*** The Avon represents sea lamprey *Petromyzon marinus* in a high-quality river in the southern part of its range. There are excellent examples of the features that the species needs for survival, including extensive areas of sand and gravel in the middle to lower reaches of the river where sea lampreys are known to spawn. **S1096 Brook lamprey *Lampetra planeri*** The Avon is a high-quality river that represents the southern part of the range of brook lamprey *Lampetra planeri*. A healthy, stable population occurs in the main river and in a number of tributaries. The main river, and in particular its tributaries, provides clean beds of gravel for spawning and extensive areas of fine silt for juveniles to burrow into. **S1106 Atlantic salmon *Salmo salar*** The Avon in southern England represents a south coast chalk river supporting Atlantic salmon *Salmo salar*. The salmon populations here are typical of a high-quality chalk stream, unaffected by the introduction of genetic stock of non-native origin. The Avon has an excellent mosaic of aquatic habitats, which include extensive areas of gravels essential for spawning and growth of juvenile fry. There has been limited modification of the river course by comparison with many other southern lowland rivers in England. **S1163 Bullhead *Cottus gobio*** The Avon represents bullhead *Cottus gobio* in a calcareous, relatively unmodified river in the southern part of its range in England. The River Avon has a mosaic of aquatic habitats that support a diverse fish community. The bullhead is an important component of this community, particularly in the tributaries.	**Water Dependent?** Yes
Current conservation status (Article 17):	**3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation** **Overall assessment of conservation status:** Unfavourable – Bad: (range: favourable, area: unfavourable – inadequate, specific structure and functions: unfavourable – bad, future prospects: unfavourable – inadequate). **Overall trend in conservation status**: Improving. **Main pressure and threats**: forestry activities generating pollution to surface or ground waters; hydropower; invasive alien species; mixed source pollution to surface and ground waters; modification of hydrological flow; physical alteration of water bodies; temperature changes due to climate change; drought and decrease in precipitation due to climate change; increases or changes in precipitation due to climate change. **S1016 Desmoulin`s whorl snail *Vertigo moulinsiana*** **Overall assessment of conservation status:** Unfavourable – bad (range: unfavourable – bad, population: unfavourable – bad, habitat for the species: unfavourable – bad, future prospects: unfavourable – bad). **Overall trend in conservation status**: Deteriorating. **Main pressure and threats**: mowing or cutting of grasslands; agricultural activities generating diffuse pollution to surface or grounds waters; abstraction from groundwater, surface water or mixed water; droughts and decreases in precipitation due to climate change; increases or changes in precipitation due to climate change. **1095 Sea lamprey *Petromyzon marinus*** **Overall assessment of conservation status:** Unknown (range: favourable, population: unknown, habitat for the species: unknown, future prospects: unknown). **Overall trend in conservation status**: Unknown. **Main pressure and threats**: Modification of hydrological flow; physical alteration of water bodies; drought and decrease in precipitation due to climate change; change of habitat location/size/quality due to climate change; point source and diffuse pollution generated by agricultural and forestry activities; hydropower; discharge of urban waste water. **1096 Brook lamprey *Lampetra planeri*** **Overall assessment of conservation status:** Unknown (range: favourable, population: unknown, habitat for the species: unknown, future prospects: unknown). **Overall trend in conservation status**: Unknown. **Main pressure and threats**: point source and diffuse pollution generated by agricultural activities; hydropower; mixed source pollution to surface and ground waters; modification of hydrological flow; physical alteration of water bodies; droughts and decrease in precipitation due to climate change; change of habitat location/size/quality due to climate change; invasive alien species. **1106 Atlantic salmon *Salmo salar*** **Overall assessment of conservation status:** Unfavourable – inadequate (range: favourable, population: unfavourable – inadequate, habitat for the species: favourable, future prospects: unfavourable – inadequate). **Overall trend in conservation status**: Stable. **Main pressure and threats**: point source and diffuse pollution generated by agricultural and forestry activities; management of fishing stocks; introduction and spread of species in freshwater and marine aquaculture; physical alteration of water bodies; impact from climate change on temperature, precipitation and biological/ecological processes (desynchronisation). **1163 Bullhead *Cottus gobio*** **Overall assessment of conservation status:** Favourable (range: favourable, population: favourable, habitat for the species: unknown, future prospects: favourable). **Overall trend in conservation status**: Stable.	

European Site name:	**River Avon SAC (UK0013016)**		
	Main pressure and threats: physical alteration of water bodies; climate related changes in abiotic conditions; hydropower; freshwater fish and shellfish harvesting; problematic native species; invasive species; mixed source pollution to surface and ground waters; modification of hydrological flow.		
Conservation objectives:	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; • The extent and distribution of qualifying natural habitats and habitats of qualifying species • The structure and function (including typical species) of qualifying natural habitats • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site.		
SSSI condition assessment:	Jones's Mill SSSI: favourable 100% Lower Woodford Water Meadows SSSI: favourable 93.39%, unfavourable- recovering 6.61% Porton Meadows SSSI: unfavourable- recovering 65.44%, unfavourable- no change 31.94%, unfavourable- declining 2.62% River Avon System SSSI: favourable 2.82%, unfavourable- recovering 7.46%, unfavourable- no change 85.61%, unfavourable- declining 4.10% River Till SSSI: unfavourable- recovering 54.98%, unfavourable- no change 45.02%		
Site Improvement Plan (only threats and actions relevant to the WRMP):	• Physical modification – Pressure – H3260 Rivers with floating vegetation often dominated by water-crowfoot, S1016 Desmoulin`s whorl snail, S1095 Sea lamprey, S1096 Brook lamprey, S1106 Atlantic salmon, S1163 Bullhead – Restore channel morphology and natural hydromorphological river processes • Siltation – Pressure – H3260 Rivers with floating vegetation often dominated by water-crowfoot, S1095 Sea lamprey, S1096 Brook lamprey, S1106 Atlantic salmon, S1163 Bullhead – Reduce siltation inputs from agriculture, tracks and roads • Water pollution – Pressure/ threat – H3260 Rivers with floating vegetation often dominated by water-crowfoot, S1016 Desmoulin`s whorl snail, S1095 Sea lamprey, S1096 Brook lamprey, S1106 Atlantic salmon, S1163 Bullhead – Reduce phosphorus and organic pollutants from diffuse pollution and point sources • Water abstraction – Pressure/ threat – H3260 Rivers with floating vegetation often dominated by water-crowfoot, S1095 Sea lamprey, S1096 Brook lamprey, S1106 Atlantic salmon, S1163 Bullhead – Restore river flows (favourable condition targets) • Changes in species distributions – Threat – S1016 Desmoulin`s whorl snail, S1106 Atlantic salmon – Monitor, investigate and aim to restore swan, snail and salmon populations • Invasive species – Pressure/ threat – H3260 Rivers with floating vegetation often dominated by water-crowfoot, S1095 Sea lamprey, S1096 Brook lamprey, S1106 Atlantic salmon, S1163 Bullhead – Control invasive plant species; monitor and investigate Signal crayfish impacts • Hydrological changes – Threat – S1016 Desmoulin`s whorl snail – Restore hydrology to sites and wetland mosaic/ network that supports Desmoulin's whorl snail • Inappropriate weed control – Threat – H3260 Rivers with floating vegetation often dominated by water-crowfoot, S1092 White-clawed crayfish, S1095 Sea lamprey, S1096 Brook lamprey, S1163 Bullhead – Reduce the impact of weed cutting on the river habitat and fish species • Habitat fragmentation – Threat – H3260 Rivers with floating vegetation often dominated by water-crowfoot, S1016 Desmoulin`s whorl snail, S1095 Sea lamprey, S1096 Brook lamprey, S1106 Atlantic salmon, S1163 Bullhead – Explore amendment to the SAC/ SPA designation		
Option name	**Screening Assessment**	**Likely significant effect (LSE) alone?**	**If no LSE alone: Residual low-level effect requiring in-combination assessment**
Option R005: Cheddar Reservoir	This option is approximately 1.5km, south-west of River Avon SAC. Option R005 is based on option Cheddar 2 as developed within WCN SRO. This option includes the construction of a second reservoir at Cheddar (capacity c.9000Ml so surface area of 868000m^2) with associated infrastructure and a new dedicated WTW. The reservoir would be filled alongside the existing reservoir and within the existing abstraction licence at Cheddar Springs and on the River Axe. Infrastructure required would include WTW, a 6.5km raw water main, a 48km potable water main and 6 pumping stations. Potential impact pathways with regards to the qualifying features of River Avon SAC include 1) Physical modification, 2) Siltation, 3) Water pollution, 5) Changes in species distribution, 6) Invasive species and 9) habitat fragmentation. **H3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation** The footprint of the scheme pipeline runs through the River Wylye upstream of the River Avon SAC and therefore construction of the scheme could negatively impact the SAC habitats through water pollution and siltation. Unclean PPE and construction equipment may introduce invasive species into and around the river. Suitable mitigation measures would be required during the construction of the scheme. No LSE are anticipated to impact the SAC from the operation of the scheme as any increase in abstraction from Cheddar springs will be within the limits of the existing abstraction licence. Under the current licence it is anticipated that negatively affects to water dependent habitats are not likely. LSE from construction activities cannot be ruled out at this stage and furthers assessments are required through a Stage 2 Appropriate Assessment.	Yes	N/A
	S1095 Petromyzon marinus Sea lamprey, S1096 Lampetra planeri Brook lamprey, S1106 Salmo salar Atlantic salmon, S1163 Cottus gobio Bullhead, S1016 Vertigo moulinsiana Desmoulin`s whorl snail The footprint of the scheme pipeline runs through the River Wylye upstream of the River Avon SAC and therefore construction of the scheme could negatively impact migratory SAC species through water pollution and siltation. Voise and vibration from construction works could affect spawning species and disturb other species. Unclean PPE and construction equipment may introduce invasive species into and around the river. Suitable mitigation measures would be required during the construction of the scheme. No LSE are anticipated to impact the SAC from the operation of the scheme as any increase in abstraction from Cheddar springs will be within the limits of the existing abstraction licence. Under the current licence it is anticipated that negatively affects to water dependent habitats are not likely. LSE from construction activities cannot be ruled out at this stage and furthers assessments are required through a Stage 2 Appropriate Assessment.	Yes	N/A

Salisbury Plain SAC

European Site name:	**Salisbury Plain SAC (UK0012683)**	
Designation type: (SAC, SPA, Ramsar):	SAC	
Qualifying features:	**H5130 *Juniperus communis* formations on heaths or calcareous grasslands** Salisbury Plain represents Juniperus communis formations near the southern edge of the habitat's range on chalk in southern England, where it is particularly rare. This site is the best remaining example in the UK of lowland juniper scrub on chalk. The juniper is juxtaposed with extensive 6210 semi-natural dry grassland and chalk heath. In some cases the scrub has developed recently by invasion of open chalk grassland and contains few typical shrub species. However, most of the scrub is of the southern mixed scrub type and is enriched by roses *Rosa* spp., wild privet *Ligustrum vulgare*, dogwood *Cornus sanguinea*, wayfaring tree *Viburnum lantana* and other species characteristic of the type. **H6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)** This site hosts the priority habitat type "orchid rich sites". Salisbury Plain in central southern England is believed to be the largest surviving semi-natural dry grassland within the EU and is therefore the most important site for this habitat in the UK. It supports extensive examples of CG3 Bromus erectus grassland, which is the most widespread and abundant calcareous grassland found in the UK. It also contains extensive areas of the rare CG7 *Festuca ovina – Hieracium pilosella – Thymus praecox* grassland, and one of the largest examples of CG6 *Avenula pubescens* grassland. **S1065 Marsh fritillary *Euphydryas (Eurodryas, Hypodryas) aurinia*** Salisbury Plain represents marsh fritillary *Euphydryas aurinia* in chalk grassland in central southern England, and contains a cluster of large sub-populations where the species breeds on dry calcareous grassland. The site extends the range of ecological variability included in the SAC series.	**Water Dependent?** Yes (all qualifying features)
Current conservation status (Article 17):	**H5130 *Juniperus communis* formations on heaths or calcareous grasslands** **Overall assessment of conservation status**: Unfavourable – bad (range: unknown, area: favourable, structure and function: unfavourable – bad, future prospects: unfavourable – bad). **Overall trend in conservation status:** Stable **Main pressures and threats**: Intensive grazing or overgrazing by livestock, extensive grazing or undergrazing by livestock, burning for agriculture, management of fishing stocks and game, problematic native species, plant and animal disease, pathogens and pests, natural succession resulting in species composition change, increases or changes in precipitation due to climate change. **H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)** **Overall assessment of conservation status:** Unfavourable-bad (range: favourable, area: unfavourable – inadequate, structure and function: unfavourable – bad, future prospects: unfavourable – bad). **Overall trend in conservation status**: Deteriorating **Main pressure and threats:** conversion into agricultural land, abandonment of grassland management, extensive grazing or undergrazing by livestock, application of synthetic fertilisers on agricultural land, agricultural activities generating diffuse pollution to surface or groundwaters, extraction of minerals, mixed source pollution to surface and ground waters, mixed source air pollution, air-borne pollutants, droughts and decreases in precipitation due to climate change, increases or changes in precipitation due to climate change. **S1065 Marsh fritillary *Euphydryas (Eurodryas, Hypodryas) aurinia*** **Overall assessment of conservation status:** Unfavourable – inadequate (range: favourable, population: favourable; habitat for the species: unfavourable – inadequate , future prospects: unfavourable – inadequate). **Overall trend in conservation status:** Stable **Main pressures and threats:** conversion into agricultural land, abandonment of grassland management; mowing or cutting pf grasslands, intensive grazing or overgrazing by livestock, drainage for use as agricultural land, natural succession resulting in species composition change.	
Conservation objectives:	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; • The extent and distribution of qualifying natural habitats and habitats of qualifying species • The structure and function (including typical species) of qualifying natural habitats • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site.	
SSSI condition assessment:	Parsonage Down SSSI: favourable 78.65%, unfavourable- recovering 21.35% Porton Down SSSI: favourable 14.80%, unfavourable- recovering 85.20% Salisbury Plains SSSI: favourable 45.27%, unfavourable- recovering 53.33%	
Site Improvement Plan (only threats and actions relevant to the WRMP):	• Change in species distribution – Pressure – H5130 Juniper on heaths or calcareous grasslands, H6210 Dry grasslands and scrublands on chalk or limestone (important orchid sites) – Conservation management to improve the juniper populations on Salisbury Plain and Porton Down towards favourable condition. • Air pollution: risk of atmospheric nitrogen deposition – Pressure – H5130 Juniper on heaths or calcareous grasslands, S1065 Marsh fritillary butterfly – Control, reduce and ameliorate atmospheric nitrogen impacts.	
Option name	**Screening Assessment**	**Likely significant effect (LSE) alone?** / **If no LSE alone: Residual low-level effect requiring in-combination assessment**
Option R005: Cheddar Reservoir	This option is approximately 6.6km, south-west of Salisbury Plain SAC. Option R005 is based on option Cheddar 2 as developed within WCN SRO. This option includes the construction of a second reservoir at Cheddar (capacity c.9000Ml so surface area of 868000m^2) with associated infrastructure and a new dedicated WTW. The reservoir would be filled alongside the existing reservoir and within the existing abstraction licence at Cheddar Springs and on the River Axe. Infrastructure required would include WTW, a 6.5km raw water main, a 48km potable water main and 6 pumping stations. Potential impact pathways with regards to the qualifying features of Salisbury Plain SAC include 1) Changes in species distribution and 2) air pollution. **H5130 *Juniperus communis* formations on heaths or calcareous grasslands; H6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)** The scheme footprint lies outside of the SAC boundary so direct loss or disturbance is not likely. Due to the distance between the SAC and the work footprint (pipeline construction0 and due to the lack of hydrological connectivity, construction works is not anticipated to result in impacts upon the habitat features of the SAC. No LSE are anticipated to impact the SAC from the operation of the scheme as any increase in abstraction from Cheddar springs will be within the limits of the existing abstraction licence. Under the current licence it is anticipated that negatively affects to water dependent habitats are not likely. No LSE from	No / No

European Site name:	Salisbury Plain SAC (UK0012683)		
	construction and operation are anticipated upon the qualifying features of the SAC. No residual impacts are anticipated upon the SAC, therefore no in-combination LSE are anticipated.		
	S1065 Marsh fritillary *Euphydryas (Eurodryas, Hypodryas) aurinia* The scheme footprint is outside of the SAC boundary, meaning that direct disturbance to these species is unlikely during the construction and operation of the scheme. Although S1065 marsh fritillary butterfly *Euphydryas aurinia* can disperse between 15-20km, adult butterflies tend to be sedentary. Given the small scale (20m working width) and temporary nature of the pipeline construction, no LSEs are anticipated.	No	no

Severn Estuary SAC

European Site name:	**Severn Estuary SAC (UK0013030)**	
Designation type: (SAC, SPA, Ramsar):	SAC	
Qualifying features:	H1130 Estuaries H1140 Mudflats and sandflats not covered by seawater at low tide H1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) H1110 Sandbanks which are slightly covered by sea water all the time H1170 Reefs S1095 Sea lamprey *Petromyzon marinus* S1099 River lamprey *Lampetra fluviatilis* S1103 Twaite shad *Alosa fallax*	**Water Dependent?** Yes (all qualifying features)
Current conservation status (Article 17):	**H1130 Estuaries** **Overall assessment of conservation status**: Unfavourable – bad (range: favourable, area: unknown, structure and function: unfavourable – bad, future prospects: unfavourable – bad). **Overall trend in conservation status:** Unknown **Main pressures and threats**: Fish and Shellfish Aquaculture; professional fishing; fixed location fishing; leisure fishing; bait digging; taking / removal of fauna, general; taking / removal of flora, general; hunting, fishing or collecting activities not referred to above; sand and gravel extraction; urbanised areas, human habitation; industrial or commercial areas; discharges; port areas; energy transport; pipe lines; shipping; nautical sports; motorised vehicles; pollution; water pollution; trampling, overuse; landfill, land reclamation and drying out, general; polderisation; reclamation of land from sea, estuary or marsh; infilling of ditches, dykes, ponds, pools, marshes or pits; removal of sediments (mud…); canalisation; flooding; modification of hydrographic functioning, general; modification of marine currents; management of water levels; dumping, depositing of dredged deposits; dykes, embankments, artificial beaches, general; sea defence or coast protection works; erosion; drying out / accumulation of organic material; eutrophication; acidification; invasion by a species; interspecific faunal relations; interspecific floral relations; genetic pollution. **H1140 Mudflats and sandflats not covered by seawater at low tide** **Overall assessment of conservation status:** Unfavourable – bad (range: favourable, area: unknown, structure and function: unfavourable – bad, future prospects: unfavourable – bad). **Overall assessment of conservation trend:** Unknown **Main pressures and threats:** fish and shellfish aquaculture; professional fishing; fixed location fishing; leisure fishing; bait digging; urbanised areas, human habitation; industrial or commercial areas; discharges; port areas; sport and leisure structures; nautical sports; motorised vehicles; pollution; water pollution; trampling, overuse; dykes, embankments, artificial beaches, general; erosion; eutrophication; invasion by a species; interspecific faunal relations; interspecific floral relations; genetic pollution. **H1130 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)** **Overall assessment of conservation status:** Unfavourable – bad (range: favourable, area: unfavourable – inadequate; structure and function: unfavourable – bad, future prospects: unfavourable – bad). **Overall trend in conservation status:** Deteriorating **Main pressures and threats:** grazing; abandonment of pastoral systems; discharges; water pollution; soil pollution; military manoeuvres; reclamation of land from sea, estuary or marsh; drainage; flooding; modification of marine currents; sea defence or coast protection works; erosion; submersion; invasion by a species; competition. **H1110 Sandbanks which are slightly covered by sea water all the time** **Overall assessment of conservation status:** Unfavourable – bad (range: favourable, area: unknown, structure and function: unfavourable – bad, future prospects: unfavourable – bad). **Overall trend in conservation status:** Unknown **Main pressures and threats:** fish and shellfish aquaculture; professional fishing; trawling; drift-net fishing; leisure fishing; sand and gravel extraction; exploration and extraction of oil or gas; urbanised areas, human habitation; industrial or commercial areas; discharges; port areas; energy transport; pipe lines; shipping; pollution; water pollution; Modification of hydrographic functioning, general; modification of marine currents; dumping, depositing of dredged deposits; sea defence or coast protection works; erosion; eutrophication; invasion by a species; interspecific faunal relations; other forms or mixed forms of interspecific faunal competition; introduction of disease; genetic pollution. **H1170 Reefs** **Overall assessment of conservation status:** Unfavourable – inadequate (range: unknown, area: unknown, structure and function: unfavourable – inadequate, future prospects: unfavourable – inadequate). **Overall trend in conservation status:** Unknown **Main pressures and threats:** marine fish and shellfish harvesting (professional, recreational) activities causing physical loss and disturbance of seafloor habitats and reduction of species/prey populations and disturbance of species, transmission of electricity and communications (cables), shipping lanes, ferry lanes and anchorage infrastructure (e.g. canalisation, dredging), modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defences or coastal protection works and infrastructures), invasive alien species, water pollution, climate change (temperature and sea level and wave exposure). **S1095 Sea lamprey *Petromyzon marinus*** **Overall assessment of conservation status:** Unknown (range: favourable, population: unknown, habitat for the species: unknown, future prospects: unknown). **Overall trend in conservation status**: Unknown. **Main pressure and threats**: Modification of hydrological flow; physical alteration of water bodies; drought and decrease in precipitation due to climate change; change of habitat location/size/quality due to climate change; point source and diffuse pollution generated by agricultural and forestry activities; hydropower; discharge of urban waste water. **S1099 River lamprey *Lampetra fluviatilis*** **Overall assessment of conservation status:** Favourable (range: favourable, population: favourable, habitat for the species: unknown, future prospects: favourable). **Overall trend in conservation status**: Unknown. **Main pressure and threats**: point source and diffuse pollution generated by agricultural activities; hydropower; discharge of urban waste water; mixed source pollution to surface and ground waters; drainage; development and operation of dams; modification of hydrological flow; physical alteration of water bodies; change of habitat location/size/quality due to climate change; invasive alien species. **S1103 Twaite shad *Alosa fallax*** **Overall assessment of conservation status:** Unfavourable – inadequate (range: unfavourable – inadequate, population: unfavourable – inadequate, habitat for the species: unfavourable – inadequate, future prospects: unfavourable – inadequate). **Overall trend in conservation status**: Stable. **Main pressure and threats**: hydropower; marine fish and shellfish harvesting; invasive alien species; mixed source pollution to surface and ground waters; drainage; modification of hydrological flow; physical alteration of water bodies; abstraction of surface and ground water for energy production; climate related changes in abiotic conditions.	
Conservation objectives:	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; • The extent and distribution of qualifying natural habitats and habitats of qualifying species	

European Site name:	Severn Estuary SAC (UK0013030)		
	• The structure and function (including typical species) of qualifying natural habitats • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site.		
SSSI condition assessment:	Severn Estuary SSSI: 95.80% Favourable, 0.08% Unfavourable – recovering and 2.43% Unfavourable – no change. Bridgwater Bay SSSI: 88.42% Favourable, 11.28% Unfavourable – Recovering and 0.29% Unfavourable – No change. Upper Severn Estuary SSSI: 85.85% Favourable and 3.31% Unfavourable – Recovering.		
Site Improvement Plan (only threats and actions relevant to the WRMP):	• Public access/disturbance – Pressure/Threat – 1130 Estuaries, 1170 Reefs, 1330 Atlantic salt meadows – Identify/reduce impacts of disturbance to birds and damage to habitats. • Physical modification – Threat – 1095 Sea lamprey, 1099 River lamprey and 1103 Twaite shad – Reduce, remove (where possible) and prevent barriers to migratory species. • Impacts of development – Pressure/Threat – 1130 Estuaries, 1170 Reefs, 1330 Atlantic salt meadows, 1140 Intertidal mudflats and sandflats, 1095 Sea lamprey, 1099 River lamprey and 1103 Twaite shad – Inform strategic planning decisions to minimise impact of development. • Coastal squeeze – Pressure/Threat – 1130 Estuaries, 1170 Reefs, 1330 Atlantic salt meadows, 1140 Intertidal mudflats and sandflats – Limit coastal squeeze, provide sustainable coastal defences, improve existing structures, deliver compensatory habitat. • Change in land management – Pressure/Threat – 1130 Estuaries, 1330 Atlantic salt meadows – Maintain appropriate levels and timing of grazing and management of intertidal saltmarsh habitat. • Changes in species distributions – Threat – 1095 Sea lamprey, 1099 River lamprey and 1103 Twaite shad – Understand/prepare for changes in species distribution (caused by climate change/other events). • Water pollution – Pressure/Threat – 1110 Subtidal sandbanks, 1130 Estuaries, 1170 Reefs, 1330 Atlantic salt meadows, 1140 Intertidal mudflats and sandflats, 1095 Sea lamprey, 1099 River lamprey and 1103 Twaite shad – Identify any existing issues and prevent/reduce decline in water and sediment quality (applying relevant measures to all relevant tributaries in England and Wales). • Air Pollution: impact of atmospheric nitrogen deposition – Pressure – 1130 Estuaries, 1330 Atlantic salt meadows, 1095 Sea lamprey, 1099 River lamprey, 1103 Twaite shad and waterbird assemblage – Develop a Site Nitrogen Action Plan. • Marine consents and permits minerals and waste – Pressure/Threat – 1110 Subtidal sandbanks, 1140 Intertidal mudflats and sandflats, 1170 Reefs, 1330 Atlantic salt meadows, 1095 Sea lamprey, 1099 River lamprey, 1103 Twaite shad – Ensure in-combination/cumulative impacts from aggregate extraction, maintenance dredging and disposal are fully considered. • Fisheries: recreational marine and estuarine – Pressure – 1095 Sea lamprey, 1099 River lamprey and 1103 Twaite shad, 1140 Intertidal mudflats and sandflats, 1170 Reefs and 1330 Atlantic salt meadows – Establish levels and location • Fisheries: commercial marine and estuarine – Threat – 1095 Sea lamprey, 1099 River lamprey and 1103 Twaite shad, 1140 Intertidal mudflats and sandflats, 1170 Reefs and 1330 Atlantic salt meadows – Identify any threats to site features and habitats from commercial fisheries activity and establish and ensure compliance with any necessary management measures. • Invasive species – Threat – 1130 Estuaries, 1170 Reefs, 1330 Atlantic salt meadows, 1140 Intertidal mudflats and sandflats – Assess the risks from and control the spread of invasive non-native species. • Marine litter – Pressure/Threat – 1130 Estuaries, 1170 Reefs, 1330 Atlantic salt meadows, 1140 Intertidal mudflats and sandflats, 1095 Sea lamprey, 1099 River lamprey and 1103 Twaite shad – Investigate sources of marine litter and implement actions for removal/shoreline clean up. • Marine pollution incidents – Threat – 1110 Subtidal sandbanks, 1130 Estuaries, 1170 Reefs, 1330 Atlantic salt meadows, 1140 Intertidal mudflats and sandflats, 1095 Sea lamprey, 1099 River lamprey and 1103 Twaite shad – Minimise impact from marine pollution incidents and clean up response.		
Option name	**Screening Assessment**	**Likely significant effect (LSE) alone?**	**If no LSE alone: Residual low-level effect requiring in-combination assessment**
Option P01_01: Charterhouse	This option is located approximately 17km west of Severn Estuary SAC. Option P01_01 will require low lift pumps from the Upper Springs to the treatment works and an extension of the treatment process for the additional 0.74 Ml/d. This option will use existing raw water mains from the Upper and Lower Springs, however there are some uncertainties if work to the water mains will be required. Potential impact pathways with regards to the qualifying feature of Severn Estuary SAC includes 1) public access/disturbance, 2) physical modification, 3) impacts of development, 5) change in land management, 6) change in species distributions, 7) water pollution, 8) air pollution and 12) invasive species. **H1130 Estuaries, H1140 Mudflats and sandflats not covered by seawater at low tide, H1130 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*), H1110 Sandbanks which are slightly covered by sea water all the time and H1170 Reefs** **S1095 Sea lamprey *Petromyzon marinus,* S1099 River lamprey *Lampetra fluviatilis* and S1103 Twaite shad *Alosa fallax*** Due to the distance between the SAC and the option (17km) and the lack of hydrological connectivity, construction works is not anticipated to result in impacts of the qualifying features of the SAC. The operation of the option will result in further water abstraction (0.74Ml/d) which may result in moderate negative effects on the river flow and minor discernible effects on groundwater quantity as the amount of water abstracted is small compared to the scale of the groundwater body. Therefore, operation of the option may result in impacts on water flows input to the Severn Estuary SAC and functionally linked habitats supporting migratory fish species associated with the Severn Estuary SAC. Impacts to the groundwater levels and GWDTE needs further assessments. Therefore, LSE from operational activities cannot be ruled out at this stage and further assessments are required through a Stage 2 Appropriate Assessment.	Yes	N/A
Option P08: Alderley WTW	This option is approximately 16.3km, east of Severn Estuary SAC. Option P08 will require an upgrade of the water treatment works to maximise the yield of the existing operational source at Alderley. The yield is expected to be of 2Ml/d and will be maintained within the current water abstraction licence. No further infrastructure will be required to be built outside the site. Potential impact pathways with regards to the qualifying feature of Severn Estuary SAC include 2) physical modification, 3) impacts of development, 6) change in species distributions, 7) water pollution, 8) air pollution and 12) invasive species. **H1130 Estuaries, H1140 Mudflats and sandflats not covered by seawater at low tide, H1130 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*), H1110 Sandbanks which are slightly covered by sea water all the time and H1170 Reefs** **S1095 Sea lamprey *Petromyzon marinus,* S1099 River lamprey *Lampetra fluviatilis* and S1103 Twaite shad *Alosa fallax*** Due to the distance between the option and the SAC, and due to the scope of the works with upgrade of existing infrastructure within the treatment works, no impacts are anticipated from construction works upon the SAC. However the operation of the option will result in an increase of 2Ml/d of water abstracted which	Yes	N/A

European Site name:	Severn Estuary SAC (UK0013030)		
	may have an impact on groundwater levels and water flow input within the Severn Estuary SAC. Flows into Berkley Pill are unlikely to be affected with the confluence of the Little Avon River. The large sluice structure at Berkley Pill is also likely to limit migratory fish into the watercourses, no salmon have been identified upstream of the sluice, however potential future changes to fish passage at the structure can't be ruled out. European eels have been identified within upstream watercourses. In the context of the Severn estuary, changes in flow are considered minimal and therefore no impacts are anticipated upon the estuary. due to the potential impacts from flow changes in potentially functionally linked habitat supporting migratory fish species associated with Severn Estuary SAC it is not possible to conclude no likely significant effects, further assessment would be required through a Stage 2 Appropriate Assessment.		
Option R08_02: Bathford	This option is located approximately 28km, east of Severn Estuary SAC. Option R08_02 involve the development of a new supply source on the Middle River Avon at Bathford where 1.4Ml/d should be available. Water abstracted would be treated on site and pumped to Tolldown Service Reservoir. Therefore, booster pumping station would be required along the 16.7km pipeline and at Banner Down. The proposed pipeline route would follow minor roads and existing distribution mains routes where possible. Potential impact pathways with regards to the qualifying feature of Severn Estuary SAC include 1) public access/disturbance, 2) physical modification, 3) impacts of development, 5) change in land management, 6) change in species distributions, 7) water pollution, 8) air pollution and 12) invasive species. **H1130 Estuaries, H1140 Mudflats and sandflats not covered by seawater at low tide, H1130 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*), H1110 Sandbanks which are slightly covered by sea water all the time and H1170 Reefs** **S1095 Sea lamprey *Petromyzon marinus,* S1099 River lamprey *Lampetra fluviatilis* and S1103 Twaite shad *Alosa fallax*** Due to the hydrological connectivity between the SAC and option R08_02 through the River Avon, construction works may result in indirect impacts upon Severn Estuary SAC through surface and groundwater pollution incidents and sedimentation. Furthermore, the operation of the option may result in changes in groundwater levels and minor discernible effects on river flow into the Severn Estuary SAC and may result in impacts upon supporting habitats if present within the River Avon. Therefore LSE from construction and operational activities cannot be rules out at this stage, further assessment would be required through a Stage 2 Appropriate Assessment.	Yes	N/A
Option R08_03: Frome at Frenchay	This option is located approximately 2.5km, east of Severn Estuary SAC. Option R08_03 involves the development of a new supply source on the Bristol Frome at Frenchay. Water abstracted and pumped to Littleton WTW for treatment and distribution. This option would require a new pumping station at the abstraction site and a 13.2km pipeline. No further upgrades at Littleton WTW will be required. Potential impact pathways with regards to the qualifying feature of Severn Estuary SAC include 1) public access/disturbance, 2) physical modification, 3) impacts of development, 5) change in land management, 6) change in species distributions, 7) water pollution, 8) air pollution and 12) invasive species. **H1130 Estuaries, H1140 Mudflats and sandflats not covered by seawater at low tide, H1130 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*), H1110 Sandbanks which are slightly covered by sea water all the time and H1170 Reefs** **S1095 Sea lamprey *Petromyzon marinus*, S1099 River lamprey *Lampetra fluviatilis* and S1103 Twaite shad *Alosa fallax*** Due to the hydrological connectivity between the SAC and option R08_03 through the River Avon, construction works may result in indirect impacts to the Severn Estuary SAC through surface and groundwater pollution incidents and sedimentation. Furthermore, the operation of the option may result in changes in groundwater levels and potentially surface water flows into the Severn Estuary SAC and may result in impacts upon supporting habitats if present within the River Avon. Therefore LSE from construction and operational activities cannot be rules out at this stage,	Yes	N/A
Option R014 : Avonmouth WWTW Direct Effluent Reuse	This option is approximately 0.1km, east of Severn Estuary SAC. Option R014 will require the treated effluent (~10Ml/d) to be taken from Wessex Water's Avonmouth Wastewater Treatment Works (WWTW) for further treatment, and put into supply at Littleton TW. The option will require the construction of a new pipe of 6.4km, from Avonmouth WWTW to connect to existing raw main. No new water abstraction licence would be required. Potential impact pathways with regards to the qualifying feature of Severn Estuary SAC include 1) public access/disturbance, 2) physical modification, 3) impacts of development, 5) change in land management, 6) change in species distributions, 7) water pollution, 8) air pollution and 12) invasive species. **H1130 Estuaries, H1140 Mudflats and sandflats not covered by seawater at low tide, H1130 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*), H1110 Sandbanks which are slightly covered by sea water all the time and H1170 Reefs** **S1095 Sea lamprey *Petromyzon marinus,* S1099 River lamprey *Lampetra fluviatilis* and S1103 Twaite shad *Alosa fallax*** Due to the distance between the option R014 and the SAC, construction works may result in indirect impacts upon Sever Estuary SAC through surface and groundwater pollution incidents and sedimentation, dust and air pollution. The operation of the option does not require new water abstraction, however there will be a reduction in volume of effluent that enters the Severn Estuary SAC. This is considered negligible in the context of the estuary. However, the reduction in effluent is unlikely to result in Likely Significant Effects upon supporting habitats, but further details are required with regards to the likely volumes and operational regime. Therefore, LSE from construction and operational activities, cannot be ruled out at this stage and further assessment will be required through a Stage 2 Appropriate Assessment.	Yes	N/A
Option R016 - Huntspill transfer	This option is located approximately 5.6km east of the Severn Estuary SAC. Option R016 will involve the transfer of water from the Huntspill River/Kings Sedgemoor drain during the winter period to provide support to Cheddar Reservoir during dry winter periods. The option will require the construction of a 19km pipeline to Axbridge, upgrade of the infrastructures at Axbridge TW on an additional land and a short pipeline from Axbridge to Cheddar reservoir. Potential impact pathways with regards to the qualifying feature of Severn Estuary SAC include 1) public access/disturbance, 2) physical modification, 3) impacts of development, 5) change in land management, 6) change in species distributions, 7) water pollution, 8) air pollution and 12) invasive species.	Yes	N/A

European Site name:	Severn Estuary SAC (UK0013030)		
	H1130 Estuaries, H1140 Mudflats and sandflats not covered by seawater at low tide, H1130 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*), H1110 Sandbanks which are slightly covered by sea water all the time and H1170 Reefs **S1095 Sea lamprey *Petromyzon marinus,* S1099 River lamprey *Lampetra fluviatilis* and S1103 Twaite shad *Alosa fallax*** Due to the hydrological connectivity between the option and the SAC through Huntspill River, construction works are considered likely to result in impacts upon the Sac through surface water pollution incidents and sedimentation. Furthermore, the operational of the option will require the transfer of water from the Huntspill River which may result in a reduction of volume of effluent that enters the Severn Estuary SAC and which may result in minor discernible effects. Therefore, LSE from construction and operation activities cannot be ruled out at this stage and further assessment will be required through a Stage 2 Appropriate Assessment.		
Option R24: Honeyhurst	This option is located approximately 12.7km east of the Severn Estuary SAC. Option R24 will involve the refurbishment of Honeyhurst Well to bring it back into service and pump water from Honeyhurst to Cheddar WTW. This option would involve the construction of a new pumping station at the Honeyhurst site and a new 4.2km pipeline. There are no further requirements to upgrade Cheddar TW. Potential impact pathways with regards to the qualifying feature of Severn Estuary SAC include 1) public access/disturbance, 2) physical modification, 3) impacts of development, 5) change in land management, 6) change in species distributions, 7) water pollution, 8) air pollution and 12) invasive species. **H1130 Estuaries, H1140 Mudflats and sandflats not covered by seawater at low tide, H1130 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*), H1110 Sandbanks which are slightly covered by sea water all the time and H1170 Reefs** **S1095 Sea lamprey *Petromyzon marinus,* S1099 River lamprey *Lampetra fluviatilis* and S1103 Twaite shad *Alosa fallax*** Due to the distance between the option and the Severn Estuary SAC, no impacts from construction works are anticipated. The operation of the option will require water abstraction at Honeyhurst which may result in minor discernible changes to groundwater level and changes to flow into the Severn Estuary SAC. Therefore, LSE from operational activities cannot be ruled out at this stage and further assessment will be required through a Stage 2 Appropriate Assessment.	Yes	N/A
Option P06: Mendip Lakes	This option is located approximately 12.7km, east of the Severn Estuary SAC. Option P06 is to continue the established programme of catchment management to reduce nutrient loads. The programme involves the implementation of the catchment grant scheme to support farms to improve their infrastructure and reduce diffuse pollution risk. This option will not require construction works nor new water abstraction licence, however the yield benefit is estimated to be an average of 0.7Ml/d. Potential impact pathways with regards to the qualifying feature of Severn Estuary SAC include 1) public access/disturbance, 2) physical modification, 3) impacts of development, 5) change in land management, 6) change in species distributions, 7) water pollution, 8) air pollution and 12) invasive species. **H1130 Estuaries, H1140 Mudflats and sandflats not covered by seawater at low tide, H1130 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*), H1110 Sandbanks which are slightly covered by sea water all the time and H1170 Reefs** **S1095 Sea lamprey *Petromyzon marinus,* S1099 River lamprey *Lampetra fluviatilis* and S1103 Twaite shad *Alosa fallax*** Due to the lack of construction works in relation to option P06, no LSE are anticipated from construction activities. Operational activities will result in additional water abstraction, however, as per the WFD assessment, it is considered that such minor additional water abstraction (yield benefit of 0.7Ml/d to be distributed between the three reservoirs) is compliant with the WFD and therefore is not considered likely to result in changes to hydrology of the downstream water body (noting that Cheddar Reservoir does not have a downstream water body) and the SAC. Therefore no LSE from construction and operation activities are anticipated from option P06 upon the qualifying features of the SAC. There is a potential positive impact on the Severn Estuary SAC through a reduction in nutrient load from diffuse water pollution.	No	Yes
Option R005: Cheddar Reservoir	This option is approximately 13.2km, east of the Severn Estuary SAC. Option R005 is based on option Cheddar 2 as developed within WCN SRO. This option includes the construction of a second reservoir at Cheddar (capacity c.9000Ml so surface area of 868000m^2) with associated infrastructure and a new dedicated WTW. The reservoir would be filled alongside the existing reservoir and within the existing abstraction licence at Cheddar Springs and on the River Axe. Infrastructure required would include WTW, a 6.5km raw water main, a 48km potable water main and 6 pumping stations. Potential impact pathways with regards to the qualifying feature of Severn Estuary SAC include 1) public access/disturbance, 2) physical modification, 3) impacts of development, 5) change in land management, 6) change in species distributions, 7) water pollution, 8) air pollution and 12) invasive species. **H1130 Estuaries, H1140 Mudflats and sandflats not covered by seawater at low tide, H1130 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*), H1110 Sandbanks which are slightly covered by sea water all the time and H1170 Reefs** **S1095 Sea lamprey *Petromyzon marinus,* S1099 River lamprey *Lampetra fluviatilis* and S1103 Twaite shad *Alosa fallax*** As the scheme is not directly in or near the SAC direct loss and disturbance to habitat will not cause any LSE. Due to the distance between the SAC and the scheme impacts from air pollution are considered negligible. Potential exposure to pollution incidents and increased sedimentation during construction works have the potential to impact the features of the SAC. Potential exposure to vibration caused by the construction the pipeline across a number of tributaries could negatively impact these species which will migrate throughout the catchment. The introduction of invasive non-native species during construction through dirty PPE or construction vehicles could also impact habitats downstream of the scheme. Suitable mitigation measures would be required during the construction of the scheme. The operation of the scheme will require additional abstraction to fill Cheddar 2 reservoir. As such there may be a change in flows/velocities and wetted widths in the Cheddar Yeo and River Axe which could impact use by migratory fish. Changes to the hydrology of the network may also affect the passability of barriers on the system. Additional abstraction may also alter the volume of pass-forward freshwater into the estuary. Therefore LSE from the construction and operation phases cannot be ruled out and further assessments are required.	Yes	N/A

Wye Valley & Forest of Dean Bat Sites SAC

European Site name:	**Wye Valley & Forest of Dean Bat Sites (UK0014794)**	
Designation type: (SAC, SPA, Ramsar):	SAC	
Qualifying features:	**1303 Lesser horseshoe bat *Rhinolophus hipposideros*** This complex of sites on the border between England and Wales contains by far the greatest concentration of lesser horseshoe bat *Rhinolophus hipposideros* in the UK, totalling about 26% of the national population. It has been selected on the grounds of the exceptional breeding population, and the majority of sites within the complex are maternity roosts. The bats are believed to hibernate in the many disused mines in the area. **1304 Greater horseshoe bat *Rhinolophus ferrumequinum*** This complex of sites on the border between England and Wales represents greater horseshoe bat *Rhinolophus ferrumequinum* in the northern part of its range, with about 6% of the UK population. The site contains the main maternity roost for bats in this area, which are believed to hibernate in the many disused mines in the Forest.	**Water Dependent?** No
Current conservation status (Article 17):	**S1303 Lesser horseshoe bat *Rhinolophus hipposideros*** **Overall assessment of conservation status:** Favourable (range: favourable, population: favourable, habitat for the species: favourable, future prospects: favourable). **Overall trend in conservation status**: Improving. **Main pressure and threats**: removal of small landscape features for agricultural land parcel consolidation; abandonment of grassland management; livestock farming; conversion to other type of forests including monocultures; logging without replanting or natural regrowth; extraction mineral; roads/paths/railroads; construction or modification in existing urban or recreational areas; sports/tourism/leisure activities; natural catastrophes. **S1304 Greater horseshoe bat *Rhinolophus ferrumequinum*** **Overall assessment of conservation status:** Favourable (range: favourable, population: favourable, habitat for the species: favourable, future prospects: favourable). **Overall trend in conservation status**: Improving. **Main pressure and threats**: removal of small landscape features for agricultural land parcel consolidation; abandonment of grassland management; livestock farming; conversion to other type of forests including monocultures; logging without replanting or natural regrowth; extraction mineral; roads/paths/railroads; construction or modification in existing urban or recreational areas; sports/tourism/leisure activities; reduced fecundity/genetic depression; natural catastrophes.	
Conservation objectives:	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: • The extent and distribution of the habitats of qualifying species, • The structure and function of the habitats of qualifying species, • 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.	
SSSI condition assessment:	Wigpool Ironstone Mine SSSI: 100% favourable.	
Site Improvement Plan (only threats and actions relevant to the WRMP):	• Physical modification: Prevent buildings with roosts from deteriorating and avoid disturbance (both physical and lighting) by advising landowners: S1303 Lesser horseshoe bat, S1304 Greater horseshoe bat. • Habitat connectivity: Maintain and improve a healthy food supply and flight pathways used by bats by supporting sensitive agricultural and forestry management of the wider landscape: S1303 Lesser horseshoe bat, S1304 Greater horseshoe bat.	

Option name	**Screening Assessment**	**Likely significant effect (LSE) alone?**	**If no LSE alone: Residual low-level effect requiring in-combination assessment**
Option R08_03: Frome at Frenchay	This option is located approximately 9.2km, south-east of Wye Valley & Forest of Dean Bat Sites SAC. Option R08_03 involves the development of a new supply source on the Bristol Frome at Frenchay. Water abstracted and pumped to Littleton WTW for treatment and distribution. This option would require a new pumping station at the abstraction site and a 13.2km pipeline. No further upgrades at Littleton WTW will be required. Potential impact pathways with regards to the qualifying feature of Wye Valley & Forest of Dean Bat Sites SAC include 2) habitat connectivity. **1303 Lesser horseshoe bat *Rhinolophus hipposideros*** and **1304 Greater horseshoe bat *Rhinolophus ferrumequinum*** As per the supplementary advice: '*During the summer lesser horseshoe bats tend to forage within 2-3km of their roost, though they can travel up to 4km from their roosts to suitable foraging grounds. Within the winter, their foraging range is reduced, with a mean foraging radius of 1.2 km around hibernation sites reported*' and '*During the summer, greater horseshoe bats from Dean Hall forage up to 9-10km from the roost, making use of a number of night roosts to rest during the feeding period. During the winter they emerge periodically for food and water, therefore habitat within the immediate vicinity of hibernation sites is important*'. Due to the distance between the option and the SAC and due to the lack of hydrological connectivity (the option is not located within the same catchment of the River Wye), construction works is not anticipated to result in impacts upon the SAC. However, construction may result in impacts on supporting commuting and foraging habitats which may be present within the option and used by greater horseshoe. The operation of the option may result in impacts to the groundwater level and water flows into the Severn Estuary of which the River Wye is a tributary. However, due to the location of the abstraction point (21km) and the amount of water to be abstracted, no impacts from operation are anticipated upon the Wye Valley & Forest of Dean Bat Sites SAC. Therefore, LSE from construction activities cannot be ruled out and further assessment are required through a Stage 2 Appropriate Assessment.	Yes	N/A

Wye Valley Woodlands SAC

European Site name:	**Wye Valley Woodlands/ Coetiroedd Dyffryn Gwy (UK0012727)**	
Designation type: (SAC, SPA, Ramsar):	SAC	
Qualifying features:	**H9130 *Asperulo-Fagetum* beech forests** The Wye Valley contains abundant and near-continuous semi-natural woodland along the gorge. Beech stands occur as part of a mosaic with a wide range of other woodland types, and represent the western range of *Asperulo-Fagetum* beech forests. Such a variety of woodland types is rare within the UK. In places lime *Tilia* sp., elm *Ulmus* sp. and oak *Quercus* sp. share dominance with the beech. Structurally the woods include old coppice, pollards and high forest types. Lady Park Wood, one of the component sites, is an outstanding example of near-natural old-growth structure in mixed broad-leaved woodland, and has been the subject of detailed long-term monitoring studies. **H9180 *Tilio-Acerion* forests of slopes, screes and ravines** The woods of the lower Wye Valley on the border of south Wales and England form one of the most important areas for woodland conservation in the UK and provide the most extensive examples of *Tilio-Acerion* forest in the west of its range. A wide range of ecological variation is associated with slope, aspect and landform. The woodland occurs here as a mosaic with other types, including beech *Fagus sylvatica* and pedunculate oak *Quercus robur* stands. Uncommon trees, including large-leaved lime *Tilia platyphyllos* and rare whitebeams such as *Sorbus porrigentiformis* and *S. rupicola* are found here, as well as locally uncommon herbs, including wood barley *Hordelymus europaeus*, stinking hellebore *Helleborus foetidus*, narrow-leaved bitter-cress *Cardamine impatiens* and wood fescue *Festuca altissima*. **H91J0 *Taxus baccata* woods of the British Isles.** Wye Valley is representative of yew *Taxus baccata* woods in the south-west of the habitat's range. It lies on the southern Carboniferous limestone, and yew occurs both as an understorey to other woodland trees and as major yew-dominated groves, particularly on the more stony slopes and crags. **1303 Lesser horseshoe bat *Rhinolophus hipposideros*** **Water Dependent?** No
Current conservation status (Article 17):	**H9130 *Asperulo-Fagetum* beech forests** **Overall assessment of conservation status:** Unfavourable - bad (range – favourable; area – unfavourable - inadequate; specific structure and functions – unfavourable - bad; future prospects – unfavourable - bad) **Overall trend in conservation status**: Stable. **Main pressure and threats:** removal of small landscape features for agricultural land parcel consolidation, agricultural activities generating air pollution, replanting with or introducing non-native species, abandonment of traditional forest management, removal of dead or dying trees, management of fishing stocks and games, other invasive alien species, plant and animal diseases, pathogens and pests, mixed source air pollution, air-borne pollutants. **H91J0 *Taxus baccata* woods of the British Isles.** **Overall assessment of conservation status:** Unfavourable - bad (range – favourable; area – favourable; specific structure and functions – unfavourable - bad; future prospects – unfavourable - bad) **Overall trend in conservation status**: Stable. **Main pressure and threats:** removal of dead or dying trees, management of fishing stocks and games, mixed source air pollution, air-borne pollutants. **H9180 Tilio-Acerion forests of slopes, screes and ravines** **Overall assessment of conservation status:** Unfavourable - bad (range – favourable; area – unfavourable - inadequate; specific structure and functions – unfavourable - bad; future prospects – unfavourable - bad) **Overall trend in conservation status**: Stable. **Main pressure and threats:** intensive grazing or overgrazing by livestock, problematic native species, plant and animal diseases, pathogens and pests, mixed source air pollution, air-borne pollutants. **S1303 Lesser horseshoe bat *Rhinolophus hipposideros*** **Overall assessment of conservation status:** Favourable (range: favourable, population: favourable, habitat for the species: favourable, future prospects: favourable). **Overall trend in conservation status**: Improving. **Main pressure and threats**: removal of small landscape features for agricultural land parcel consolidation; abandonment of grassland management; livestock farming; conversion to other type of forests including monocultures; logging without replanting or natural regrowth; extraction mineral; roads/paths/railroads; construction or modification in existing urban or recreational areas; sports/tourism/leisure activities; natural catastrophes.	
Conservation objectives:	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: • The extent and distribution of the habitats of qualifying species, • The structure and function of the habitats of qualifying species, • 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.	
SSSI condition assessment:	Astridge Wood SSSI: 100% favourable. Bigsweir Woods SSSI: 11.94% favourable, 88.06% unfavourable – no change Highbury Wood SSSI: 100% favourable. Lower Wye Gorge SSSI: 100% favourable. Shorn Cliff and Caswell Woods SSSI: 100% favourable. Swanpool Wood and Furnace Grove SSSI: 100% unfavourable - declining The Hudnalls SSSI: 100% favourable. Upper Wye Gorge SSSI: 29.41% favourable, 70.59% unfavourable – recovering.	
Site Improvement Plan (only threats and actions relevant to the WRMP):	• Invasive species: H9130 Beech forests on neutral to rich soils, H9180 Mixed woodland on base-rich soils associated with rocky slopes, H91J0 Yew-dominated woodland – Control and reduce invasive species • Habitat connectivity: H9130 Beech forests on neutral to rich soils, H9180 Mixed woodland on base-rich soils associated with rocky slopes, H91J0 Yew-dominated woodland, S1303 Lesser horseshoe bat – Improve functional connectivity through a landscape-scale approach to site protection. • Air pollution: impact of atmospheric nitrogen deposition: H9130 Beech forests on neutral to rich soils, H9180 Mixed woodland on base-rich soils associated with rocky slopes, H91J0 Yew-dominated woodland – control and reduce impacts.	

European Site name:	Wye Valley Woodlands/ Coetiroedd Dyffryn Gwy (UK0012727)		
	• Public access/disturbance: H9130 Beech forests on neutral to rich soils, H9180 Mixed woodland on base-rich soils associated with rocky slopes, H91J0 Yew-dominated woodland, S1303 Lesser horseshoe bat – Manage access to sensitive sites and cliff faces.		
Option name	**Screening Assessment**	**Likely significant effect (LSE) alone?**	**If no LSE alone: Residual low-level effect requiring in-combination assessment**
Option R08_03: Frome at Frenchay	This option is located approximately 8.8km, south-east of Wye Valley Woodlands SAC. Option R08_03 involves the development of a new supply source on the Bristol Frome at Frenchay. Water abstracted and pumped to Littleton WTW for treatment and distribution. This option would require a new pumping station at the abstraction site and a 13.2km pipeline. No further upgrades at Littleton WTW will be required. Potential impact pathways with regards to the qualifying feature of Wye Valley Woodlands SAC include 3) invasive species, 4) habitat connectivity, 6) air pollution and 8) disturbance. **H9130 *Asperulo-Fagetum* beech forests, H9180 *Tilio-Acerion* forests of slopes, screes and ravines** and **H91J0 *Taxus baccata* woods of the British Isles.** Due to the distance between the option and the SAC and the lack of hydrological connectivity (the option is not located within the same catchment of the River Wye), construction works is not anticipated to result in impacts to qualifying habitat of the SAC. The operation of the option may result in impacts to the groundwater level and water flows into the Severn Estuary of which the River Wye is a tributary. However, due to the location of the abstraction point (20.5km) and the amount of water to be abstracted, no impacts from operation are anticipated upon the Wye Valley Woodlands SAC. Therefore, no LSE from construction and operational activities are anticipated. No residual impacts are anticipated upon the SAC, therefore no in-combination LSE are anticipated.	No	No
	1303 Lesser horseshoe bat *Rhinolophus hipposideros* As per the supplementary advice: '*Lesser horseshoes tend to forage within 2.5km of their summer roost, though they can travel up to 4km from these roosts to suitable foraging grounds.. Within the winter, their foraging range is reduced, with a mean foraging radius of 1.2 km around hibernation sites reported*'. Due to the distance between the option and the SAC (8.8km) and due to the lack of hydrological connectivity (the option is not located within the same catchment of the River Wye), construction works is not anticipated to result in impacts upon the SAC. The operation of the option may result in impacts to the groundwater level and water flows into the Severn Estuary of which the River Wye is a tributary. However, due to the location of the abstraction point (20.5km) and the amount of water to be abstracted, no impacts from operation are anticipated upon the Wye Valley Woodlands SAC and supporting habitats. Therefore, LSE from construction activities cannot be ruled out and further assessment are required. No residual impacts are anticipated upon the SAC, therefore no in-combination LSE are anticipated.	No	No

Special Protection Areas and Ramsar Sites

Severn Estuary SPA & Severn Estuary Ramsar

<table>
<tr><th>European Site name:</th><th colspan="3">Severn Estuary SPA (UK9015022) & Severn Estuary Ramsar (UK11081)</th></tr>
<tr><td>Designation type: (SAC, SPA, Ramsar):</td><td colspan="3">SPA and Ramsar</td></tr>
<tr><td>Qualifying features:</td><td>This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:
Over winter:
Bewick's Swan Cygnus columbianus bewickii, 280 individuals representing at least 4.0% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)

This site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:
Over winter:
Gadwall Anas strepera;
Greater white-fronted geese Anser albifrons albifrons;
Dunlin Calidris alpina;
Common shelduck Tadorna tadorna;
Common redshank Tringa tetanus

Assemblage qualification: A wetland of international importance.
The area qualifies under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl
Over winter, the area regularly supports 93,986 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Gadwall Anas strepera, Shelduck Tadorna tadorna, Pintail Anas acuta, Dunlin Calidris alpina alpina, Curlew Numenius arquata, Redshank Tringa totanus, Bewick's Swan Cygnus columbianus bewickii, Wigeon Anas penelope, Lapwing Vanellus vanellus, Teal Anas crecca, Mallard Anas platyrhynchos, Shoveler Anas clypeata, Pochard Aythya ferina, Tufted Duck Aythya fuligula, Grey Plover Pluvialis squatarola, White-fronted Goose Anser albifrons albifrons , Whimbrel Numenius phaeopus.</td><td>Ramsar criterion 1:
Due to immense tidal range (second-largest in world), this affects both the physical environment and biological communities.
Habitats Directive Annex I features present on the pSAC include:
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
H1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
Ramsar criterion 3:
Due to unusual estuarine communities, reduced diversity and high productivity.
Ramsar criterion 4:
This site is important for the run of migratory fish between sea and river via estuary. Species include Salmon Salmo salar, sea trout S. trutta, sea lamprey Petromyzon marinus, river lamprey Lampetra fluviatilis, allis shad Alosa alosa, twaite shad A. fallax, and eel Anguilla anguilla. It is also of particular importance for migratory birds during spring and autumn.
Ramsar criterion 8:
The fish of the whole estuarine and river system is one of the most diverse in Britain, with over 110 species recorded. Salmon Salmo salar, sea trout S. trutta, sea lamprey Petromyzon marinus, river lamprey Lampetra fluviatilis, allis shad Alosa alosa, twaite shad A. fallax, and eel Anguilla Anguilla use the Severn Estuary as a key migration route to their spawning grounds in the many tributaries that flow into the estuary. The site is important as a feeding and nursery ground for many fish species particularly allis shad Alosa alosa and twaite shad A. fallax which feed on mysid shrimps in the salt wedge.
Ramsar criterion 5:
Assemblages of international importance:
Species with peak counts in winter:
70919 waterfowl (5 year peak mean 1998/99-2002/2003)
Ramsar criterion 6 – species/populations occurring at levels of international importance:
Qualifying Species/populations (as identified at designation):
Species with peak counts in winter:
Tundra swan , Cygnus columbianus bewickii, NW Europe
229 individuals, representing an average of 2.8% of the GB population (5 year peak mean 1998/9- 2002/3)
Greater white-fronted goose, Anser albifrons albifrons, NW Europe
2076 individuals, representing an average of 35.8% of the GB population (5 year peak mean for 1996/7-2000/01)
Common shelduck, Tadorna tadorna, NW Europe
3223 individuals, representing an average of 1% of the population (5 year peak mean 1998/9- 2002/3)
Gadwall, Anas strepera strepera, NW Europe
241 individuals, representing an average of 1.4% of the GB population (5 year peak mean 1998/9-2002/3)
Dunlin, Calidris alpina alpina, W Siberia/W Europe
25082 individuals, representing an average of 1.8% of the population (5 year peak mean 1998/9-2002/3)
Common redshank, Tringa totanus totanus
2616 individuals, representing an average of 1% of the population (5 year peak mean 1998/9- 2002/3)
Species/populations identified subsequent to designation for possible future consideration under criterion 6:
Species regularly supported during the breeding season:
Lesser black-backed gull, Larus fuscus graellsii, W Europe/Mediterranean/W Africa
4167 apparently occupied nests, representing an average of 2.8% of the breeding population (Seabird 2000 Census)
Species with peak counts in spring/autumn:
Ringed plover, Charadrius hiaticula, Europe/Northwest Africa
740 individuals, representing an average of 1% of the population (5 year peak mean 1998/9-2002/3)
Species with peak counts in winter:
Eurasian teal, Anas crecca, NW Europe
4456 individuals, representing an average of 1.1% of the population (5 year peak mean 1998/9-2002/3)
Northern pintail, Anas acuta, NW Europe
756 individuals, representing an average of 1.2% of the population (5 year peak mean 1998/9-2002/3)</td><td>Water Dependent?
Yes</td></tr>
<tr><td>Current conservation status (Article 12):</td><td colspan="3">051 Anas strepera; Gadwall: (type: wintering, size: minimum 282; maximum 282 (0.9% of the population 5 year peak mean 1991/92 – 1995/96), unit: individuals, data quality: good, population: 2 – 15%, isolation: population not isolated within extended distribution range).
394 Anser albifrons albifrons; Greater white-fronted geese (type: wintering, size: minimum 2664; maximum 2664 (0.4% of the population 5 year peak mean 1991/92 – 1995/96), unit: individuals, data quality: good, population: 15 - 100%, isolation: population not isolated, but on margins of area of distribution).
672 Calidris alpina alpina; Dunlin (type: wintering, size: minimum 44624; maximum 44624 (3.3% of the population 5 year peak mean 1991/92 – 1995/96), unit: individuals, data quality: good, population: 2 - 15%, isolation: population not isolated within extended distribution range).</td></tr>
</table>

European Site name:	Severn Estuary SPA (UK9015022) & Severn Estuary Ramsar (UK11081)
	037 *Cygnus columbianus bewickii;* Bewick's swan (type: wintering, size: minimum 280; maximum 280 (3.9% of the population 5 year peak mean 1991/92 – 1995/96), unit: individuals, data quality: good, population: 2 - 15%, isolation: population not isolated within extended distribution range). **048 *Tadorna tadorna;* Common shelduck** (type: wintering, size: minimum 3330; maximum 3330 (1.1% of the population 5 year peak mean 1991/92 – 1995/96), unit: individuals, data quality: good, population: 2 - 15%, isolation: population not isolated within extended distribution range). **162 *Tringa tetanus;* Common redshank** (type: wintering, size: minimum 2330; maximum 2330 (1.3% of the population 5 year peak mean 1991/92 – 1995/96), unit: individuals, data quality: good, population: 2 - 15%, isolation: population not isolated within extended distribution range). **WATR Waterfowl assemblage** (size: minimum 84317; maximum 84317. Unit: individuals; motivation: International conventions).
Conservation objectives:	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.
SSSI condition assessment:	Severn Estuary SSSI: 95.80% Favourable, 0.08% Unfavourable - recovering and 2.43% Unfavourable - no change. Bridgwater Bay SSSI: 88.42% Favourable, 11.28% Unfavourable – Recovering and 0.29% Unfavourable – No change. Upper Severn Estuary SSSI: 85.85% Favourable and 3.31% Unfavourable – Recovering.
Site Improvement Plan (only threats and actions relevant to the WRMP):	• Public access/disturbance – Pressure/Threat - 037(NB) Bewick's swan, 048(NB) Common shelduck, 051(NB) Gadwall, 149(NB) Dunlin, 162(NB) Common shelduck, 394(NB) Greater white-fronted goose and waterbird assemblage – Identify/reduce impacts of disturbance to birds and damage to habitats. • Impacts of development – Pressure/Threat - 037(NB) Bewick's swan, 048(NB) Common shelduck, 051(NB) Gadwall, 149(NB) Dunlin, 162(NB) Common shelduck, 394(NB) Greater white-fronted goose and waterbird assemblage - Inform strategic planning decisions to minimise impact of development. • Coastal squeeze – Pressure/Threat - 037(NB) Bewick's swan, 048(NB) Common shelduck, 051(NB) Gadwall, 149(NB) Dunlin, 162(NB) Common shelduck, 394(NB) Greater white-fronted goose and waterbird assemblage – Limit coastal squeeze, provide sustainable coastal defences, improve existing structures, deliver compensatory habitat. • Change in land management – Pressure/Threat - 037(NB) Bewick's swan, 048(NB) Common shelduck, 051(NB) Gadwall, 149(NB) Dunlin, 162(NB) Common shelduck, 394(NB) Greater white-fronted goose and waterbird assemblage – Maintain appropriate levels and timing of grazing and management of intertidal saltmarsh habitat. • Changes in species distributions – Threat – 037(NB) Bewick's swan, 048(NB) Common shelduck, 051(NB) Gadwall, 149(NB) Dunlin, 162(NB) Common shelduck, 394(NB) Greater white-fronted goose, waterbird assemblage - Understand/prepare for changes in species distribution (caused by climate change/other events). • Water pollution – Pressure/Threat - 037(NB) Bewick's swan, 048(NB) Common shelduck, 051(NB) Gadwall, 149(NB) Dunlin, 162(NB) Common shelduck, 394(NB) Greater white-fronted goose and waterbird assemblage – Identify any existing issues and prevent/reduce decline in water and sediment quality (applying relevant measures to all relevant tributaries in England and Wales). • Air Pollution: impact of atmospheric nitrogen deposition – Pressure - 051 Gadwall and waterbird assemblage – Develop a Site Nitrogen Action Plan. • Fisheries: recreational marine and estuarine – Pressure – 037(NB) Bewick's swan, 048(NB) Common shelduck, 051(NB) Gadwall, 149(NB) Dunlin, 162(NB) Common shelduck, 394(NB) Greater white-fronted goose and waterbird assemblage – Establish levels and location • Fisheries: commercial marine and estuarine – Threat - 037(NB) Bewick's swan, 048(NB) Common shelduck, 051(NB) Gadwall, 149(NB) Dunlin, 162(NB) Common shelduck, 394(NB) Greater white-fronted goose and waterbird assemblage - Identify any threats to site features and habitats from commercial fisheries activity and establish and ensure compliance with any necessary management measures. • Marine litter – Pressure/Threat - 037(NB) Bewick's swan, 048(NB) Common shelduck, 051(NB) Gadwall, 149(NB) Dunlin, 162(NB) Common shelduck, 394(NB) Greater white-fronted goose and waterbird assemblage – Investigate sources of marine litter and implement actions for removal/shoreline clean up. • Marine pollution incidents – Threat - 037(NB) Bewick's swan, 048(NB) Common shelduck, 051(NB) Gadwall, 149(NB) Dunlin, 162(NB) Common shelduck, 394(NB) Greater white-fronted goose and waterbird assemblage – Minimise impact from marine pollution incidents and clean up response.

Option name	Screening Assessment	Likely significant effect (LSE) alone?	If no LSE alone: Residual low-level effect requiring in-combination assessment
Option P01_01: Charterhouse	This option is located approximately 17km west of Severn Estuary SPA/Ramsar. Option P01_01 will require low lift pumps from the Upper Springs to the treatment works and an extension of the treatment process for the additional 0.74 Ml/d. This option will use existing raw water mains from the Upper and Lower Springs, however there are some uncertainties if work to the water mains will be required. Potential impact pathways with regards to the qualifying feature of Severn Estuary SPA/Ramsar includes 1) public access/disturbance, 2) physical modification, 3) impacts of development, 5) change in land management, 6) change in species distributions, 7) water pollution, 8) air pollution and 12) invasive species. Due to the distance between the Spa/Ramsar and the option (17km) and the lack of hydrological connectivity, construction works is not anticipated to result in impacts of the qualifying features of the SPA/Ramsar. The operation of the option will result in further water abstraction (0.74Ml/d) which may result in impact on the groundwater levels and water flows input to the Severn Estuary Spa/Ramsar and supporting habitats. Impacts to the groundwater levels and GWDTE needs further assessments. Therefore, LSE from operational activities cannot be ruled out at this stage and further assessments are required through a Stage 2 Appropriate Assessment.	Yes	N/A
Option P08: Alderley WTW	This option is approximately 16.3km, east of Severn Estuary SPA/Ramsar. Option P08 will require an upgrade of the water treatment works to maximise the yield of the existing operational source at Alderley. The yield is expected to be of 2Ml/d and will be maintained within the current water abstraction licence. No further infrastructure will be required to be built outside the site. Potential impact pathways with regards to the qualifying feature of Severn Estuary SPA/Ramsar include 2) physical modification, 3) impacts of development, 6) change in species distributions, 7) water pollution, 8) air pollution and 12) invasive species. Due to the distance between the option and the SPA/Ramsar, and due to the scope of the works with upgrade of existing infrastructure within the treatment works, no impacts are anticipated from construction works upon the SPA/Ramsar. Flows into Berkley Pill are unlikely to be affected with the confluence of the Little Avon River. The large sluice structure at Berkley Pill is also likely to limit migratory fish into the watercourses, no salmon have been identified upstream of the sluice. European eels have been identified	No	Yes

European Site name:	Severn Estuary SPA (UK9015022) & Severn Estuary Ramsar (UK11081)		
	within upstream watercourses. In the context of the Severn estuary, changes in flow are considered minimal and therefore no impacts are anticipated upon the estuary. As such, no LSEs during operation are considered likely.		
Option R08_02: Bathford	This option is located approximately 28km, east of Severn Estuary SPA/Ramsar. Option R08_02 involve the development of a new supply source on the Middle River Avon at Bathford where 1.4Ml/d should be available. Water abstracted would be treated on site and pumped to Tolldown Service Reservoir. Therefore, booster pumping station would be required along the 16.7km pipeline and at Banner Down. The proposed pipeline route would follow minor roads and existing distribution mains routes where possible. Potential impact pathways with regards to the qualifying feature of Severn Estuary SPA/Ramsar include 1) public access/disturbance, 2) physical modification, 3) impacts of development, 5) change in land management, 6) change in species distributions, 7) water pollution, 8) air pollution and 12) invasive species. Due to the hydrological connectivity between the SPA/Ramsar and option R08_02 through the River Avon, construction works may result in indirect impacts upon Sever Estuary SAC through surface and groundwater pollution incidents and sedimentation. Furthermore, the operation of the option may result in changes in groundwater levels and minor discernible effects to surface water flows into the Severn Estuary SPA/Ramsar and may result in impacts upon supporting habitats if present within the River Avon. Therefore LSE from construction and operational activities cannot be rules out at this stage, further assessment would be required through a Stage 2 Appropriate Assessment.	Yes	N/A
Option R08_03: Frome at Frenchay	This option is located approximately 2.5km, east of Severn Estuary SPA/Ramsar. Option R08_03 involves the development of a new supply source on the Bristol Frome at Frenchay. Water abstracted and pumped to Littleton WTW for treatment and distribution. This option would require a new pumping station at the abstraction site and a 13.2km pipeline. No further upgrades at Littleton WTW will be required. Potential impact pathways with regards to the qualifying feature of Severn Estuary SPA/Ramsar include 1) public access/disturbance, 2) physical modification, 3) impacts of development, 5) change in land management, 6) change in species distributions, 7) water pollution, 8) air pollution and 12) invasive species. Due to the hydrological connectivity between the SPA/Ramsar and option R08_03 through the River Avon, construction works may result in indirect impacts upon Severn Estuary SPA/Ramsar through surface and groundwater pollution incidents and sedimentation. Furthermore, the operation of the option may result in changes in groundwater levels and potentially surface water flows into the Severn Estuary Spa/Ramsar and may result in impacts upon supporting habitats if present within the River Avon. Therefore LSE from construction and operational activities cannot be rules out at this stage, further assessment would be required through a Stage 2 Appropriate Assessment.	Yes	N/A
Option R014 : Avonmouth WWTW Direct Effluent Reuse	This option is approximately 0.1km, east of Severn Estuary SPA/Ramsar. Option R014 will require the treated effluent (~10Ml/d) to be taken from Wessex Water's Avonmouth Wastewater Treatment Works (WWTW) for further treatment, and put into supply at Littleton TW. The option will require the construction of a new pipe of 6.4km, from Avonmouth WWTW to connect to existing raw main. No new water abstraction licence would be required. Potential impact pathways with regards to the qualifying feature of Severn Estuary SPA/Ramsar include 1) public access/disturbance, 2) physical modification, 3) impacts of development, 5) change in land management, 6) change in species distributions, 7) water pollution, 8) air pollution and 12) invasive species. Due to the distance between the option R014 and the SAC, construction works may result in impacts upon Sever Estuary SPA/Ramsar through surface and groundwater pollution incidents and sedimentation, dust and air pollution, as well as disturbance to bird communities (visual disturbance, noise, vibration). The operation of the option does not require new water abstraction, however there will be a reduction in volume of effluent that enters the Severn Estuary SAC. This is considered negligible in the context of the estuary, however the reduction may have impacts on supporting habitats. Therefore, LSE from construction and operational activities, cannot be ruled out at this stage and further assessment will be required through a Stage 2 Appropriate Assessment.	Yes	N/A
Option R016 - Huntspill transfer	This option is located approximately 5.6km east of the Severn Estuary SPA/Ramsar. Option R016 will involve the transfer of water from the Huntspill River/Kings Sedgemoor drain during the winter period to provide support to Cheddar Reservoir during dry winter periods. The option will require the construction of a 19km pipeline to Axbridge, upgrade of the infrastructures at Axbridge TW on an additional land and a short pipeline from Axbridge to Cheddar reservoir. Potential impact pathways with regards to the qualifying feature of Severn Estuary SPA/Ramsar include 1) public access/disturbance, 2) physical modification, 3) impacts of development, 5) change in land management, 6) change in species distributions, 7) water pollution, 8) air pollution and 12) invasive species. Due to the hydrological connectivity between the option and the SPA/Ramsar through Huntspill River, construction works are considered likely to result in impacts upon the Spa/Ramsar through surface water pollution incidents and sedimentation as well as disturbance to the bird communities which may present within supporting habitats. Furthermore, the operation of the option will require the transfer of water from the Huntspill River which may result in a reduction of volume of effluent that enters the Severn Estuary SPA/Ramsar, and minor discernible effects. Therefore, LSE from construction and operation activities cannot be ruled out at this stage and further assessment will be required through a Stage 2 Appropriate Assessment.	Yes	N/A
Option R24: Honeyhurst	This option is located approximately 12.7km east of the Severn Estuary SPA/Ramsar. Option R24 will involve the refurbishment of Honeyhurst Well to bring it back into service and pump water from Honeyhurst to Cheddar WTW. This option would involve the construction of a new pumping station at the Honeyhurst site and a new 4.2km pipeline. There are no further requirements to upgrade Cheddar TW. Potential impact pathways with regards to the qualifying feature of Severn Estuary Spa/Ramsar include 1) public access/disturbance, 2) physical modification, 3) impacts of development, 5) change in land management, 6) change in species distributions, 7) water pollution, 8) air pollution and 12) invasive species. Due to the distance between the option and the Severn Estuary SPA/Ramsar, no impacts from construction works are anticipated. However construction works may impact supporting habitats for the bird community associated with the Severn Estuary SPA/Ramsar. The operation of the option will require water abstraction at Honeyhurst which may result in minor discernible changes to groundwater level and changes to flow into the Severn Estuary SPA/Ramsar. Therefore, LSE from construction and operational activities cannot be ruled out at this stage and further assessment will be required through a Stage 2 Appropriate Assessment.	Yes	N/A
Option P06: Mendip Lakes	This option is located approximately 12.7km, east of the Severn Estuary SPA/Ramsar. Option P06 is to continue the established programme of catchment management to reduce nutrient loads. The programme involves the implementation of the catchment grant scheme to support farms to improve their infrastructure and reduce diffuse pollution risk. This option will not require construction works nor new water abstraction licence, however the yield benefit is estimated to be an average of 0.7Ml/d.	No	Yes

European Site name:	Severn Estuary SPA (UK9015022) & Severn Estuary Ramsar (UK11081)		
	Potential impact pathways with regards to the qualifying feature of Severn Estuary SPA/Ramsar include 1) public access/disturbance, 2) physical modification, 3) impacts of development, 5) change in land management, 6) change in species distributions, 7) water pollution, 8) air pollution and 12) invasive species. Due to the lack of construction works in relation to option P06, no LSE are anticipated from construction activities. Operational activities will result in additional water abstraction, however, as per the WFD assessment, it is considered that such minor additional water abstraction (yield benefit of 0.7Ml/d to be distributed between the three reservoirs) is compliant with the WFD and therefore is not considered likely to result in changes to hydrology of the downstream water body (noting that Cheddar Reservoir does not have a downstream water body) and the SPA/Ramsar. Therefore no LSE from construction and operation activities are anticipated from option P06 upon the habitat qualifying features of the SPA/Ramsar.		
Option R005: Cheddar Reservoir	This option is approximately 13.2km, east of the Severn Estuary SPA/Ramsar. Option R005 is based on option Cheddar 2 as developed within WCN SRO. This option includes the construction of a second reservoir at Cheddar (capacity c.9000Ml so surface area of 868000m^2) with associated infrastructure and a new dedicated WTW. The reservoir would be filled alongside the existing reservoir and within the existing abstraction licence at Cheddar Springs and on the River Axe. Infrastructure required would include WTW, a 6.5km raw water main, a 48km potable water main and 6 pumping stations. Potential impact pathways with regards to the qualifying feature of Severn Estuary SPA/Ramsar include 1) public access/disturbance, 2) physical modification, 3) impacts of development, 5) change in land management, 6) change in species distributions, 7) water pollution, 8) air pollution and 12) invasive species. As the scheme is not directly in or near the SPA/Ramsar direct loss and disturbance to habitat will not cause any LSE. Due to the distance between the SAC and the scheme impacts from air pollution are considered negligible. Potential exposure to pollution incidents and increased sedimentation during construction works have the potential to impact the features of the SPA/Ramsar. There is potential for the deterioration of supporting habitats during the operation of the new reservoir. Terrestrial habitats present within the proposed footprint of Cheddar 2 Reservoir could be lost by the creation of the reservoir impacting these species. Other supporting habitat could be impacted by a reduction in water flow in the Cheddar Yeo and River Axe during operation. There is a potential risk of deterioration of water dependent terrestrial habitats such as coastal and floodplain grazing marsh priority habitat during operation. No LSE are anticipated from the operation of the scheme as any increases in abstraction from the River Yeo are anticipated to be within the limits of the current abstraction licence. Meaning the impact to water dependent habitats downstream are anticipated to be negligible. Therefore LSE from construction cannot be ruled out and further assessments are required through a Stage 2 Appropriate Assessment.	Yes	N/A

Chew Valley Lake SPA

European Site name:	**Chew Valley Lake SPA (UK9010041)**		
Designation type: (SAC, SPA, Ramsar):	SPA		
Qualifying features:	This site qualifies under **Article 4.1** of the Directive (79/409/EEC) by regularly supporting nationally important numbers of wintering northern shoveler Anas clypeata (1.3% of the population in the five year period 1991/92 to 1995/96.	**Water Dependent?** Yes	
Current conservation status	A056 *Anas clypeata* Northern shoveler (type; wintering, size: minimum 503, maximum 503 (0.5% of the population 5 year peak mean 1991/92-1995/96), unit: individual, data quality: good, population:>2-15%, isolation: population not-isolated within extended distribution range) – short-term trend: increasing; long-term trend: increasing.		
Conservation objectives:	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.		
SSSI condition assessment:	Chew Valley Lake SSSI: favourable 100%		
Site Improvement Plan (only threats and actions relevant to the WRMP):	• Hydrological changes – Threat - Northern shoveler – Investigate impact of water levels on sire suitability for shoveler • Public access/ disturbance – Pressure/ threat - Northern shoveler – Investigate current disturbance limitation measures and explore improvements		
Option name	**Screening Assessment**	**Likely significant effect (LSE) alone?**	**If no LSE alone: Residual low-level effect requiring in-combination assessment**
Option P01_01: Charterhouse	This option is located approximately 6.7km south-west of Chew Valley Lakes SPA. Option P01_01 will require low lift pumps from the Upper Springs to the treatment works and an extension of the treatment process for the additional 0.74 Ml/d. This option will use existing raw water mains from the Upper and Lower Springs, however there are some uncertainties if work to the water mains will be required. Potential impact pathways with regards to the qualifying feature of Chew Valley SPA include 1) hydrological changes and 2) disturbance. Due to the distance between the SPA and option R005 (12.5km), construction works are not anticipated to results in impacts on the qualifying features of the SPA. Construction works may result in impacts to supporting habitats for northern shoveler if present within Charterhouse WTW, however this is considered unlikely. As per the Supplementary Advice report, northern shoveler require large areas of open water with fringing habitats and muddy water, unlikely to be present at the WTW. Option P01_01 may also result in impacts on the groundwater levels, however due to the distance between the option and the SPA and the amount of water to be abstracted, this is not considered likely to result in impacts. Therefore, no LSE from construction or operation are anticipated upon Chew Valley Lakes SPA.	No	No
Option P06: Mendip Lakes	This option is partially located within the Chew Valley Lakes SPA. Option P06 is to continue the established programme of catchment management to reduce nutrient loads. The programme involves the implementation of the catchment grant scheme to support farms to improve their infrastructure and reduce diffuse pollution risk. This option will not require construction works nor new water abstraction licence, however the yield benefit is estimated to be an average of 0.7Ml/d. Potential impact pathways with regards to the qualifying feature of Chew Valley SPA include 1) hydrological changes and 2) disturbance. Due to the lack of construction works in relation to option P06, no LSE are anticipated from construction activities. Due to the distance between Blagdon Reservoir, Cheddar Reservoir and Chew Valley Lakes SPA, and due to the lack of hydrological connectivity, additional abstraction at these two reservoirs is not considered likely to result in impacts upon the SPA. Option P06, will result in additional water abstraction at Chew Reservoir which may have a minor impact on the qualifying features of the SPA. However, as per the WFD assessment, it is considered that such minor additional water abstraction (yield benefit of 0.7Ml/d to be distributed between the three reservoirs) is compliant with the WFD and therefore is not considered likely to result in impacts on the hydrology of the reservoir. Therefore no LSE from construction and operation activities are anticipated from option P06 upon the habitat qualifying features of the SPA.	No	Yes
Option R007: Pumped Refill of Chew Valley Reservoir	This option is located approximately 4.8km, north-west of Bath & Bradford on Avon Bats SAC. Option R007 involve the transfer of water from the River Avon to the Chew Reservoir. The option would require intake structure from the River Avon at Newton Meadows, new pipeline to Stowey WTW, new pumping stations, upgrade to the treatment works at Stowey WTW (within new land). Pumping is assumed to take place four months of the year (e.g. November to February or December to March). Potential impact pathways with regards to the qualifying feature of Bath & Bradford on Avon Bats SAC include 1) planning permission, 2) change in land management, 3)direct impact from third party, 5)offsite habitat availability/management, 6)disturbance, 7) changes to site conditions. **S1304 Greater horseshoe bat *Rhinolophus ferrumequinum,* S1323 Bechstein's bat *Myotis bechsteinii and* S1303 Lesser horseshoe bat *Rhinolophus hipposideros***	Yes	N/A

European Site name:	Chew Valley Lake SPA (UK9010041)		
	Construction works may result in impacts upon the bat population associated with the SAC and supporting habitats potentially present, through direct habitat loss (roosting, foraging and commuting), habitat fragmentation, killing/injuring individuals, disturbance (light spills, noise, vibration, air pollution, dust, surface pollution incidents). This option will require pumping water within the River (assumed four months of the year over winter), therefore the operational of the option may result in a minor discernible effects on river flows in the River Avon which could result in impacts on the SAC and supporting habitats for bats. Therefore LSE from construction and operational activities cannot be rules out at this stage, further assessment would be required through a Stage 2 Appropriate Assessment.		

Somerset Levels & Moors SPA and Ramsar

European Site name:	**Somerset Levels and Moors SPA (UK9010031) and Ramsar (UK11064)**		
Designation type: (SAC, SPA, Ramsar):	SPA		
Qualifying features:	This site qualifies under **Article 4.1** of the Directive (79/409/EEC) by regularly supporting nationally important numbers of wintering Bewick's Swan *Cygnus columbianus bewickii* (310 individuals in the five year period 1989/90 to 1993/94 [4.4% of the British and 1.8% of the north-west European population]) and golden plover *Pluvialis apricaria* (3110 individuals in the five year period 1989/90 to 1993/94 [1.2% of the British population]). This site also qualifies under **Article 4.2** of the Directive (79/409/EEC) by regularly supporting over 20000 waterfowl in winter. The site further qualifies under Article 4.2 of the Directive by regularly supporting internationally important numbers of the migratory species teal *Anas crecca* and lapwing *Vanellus vanellus*. In the five-year period 1989/90 to 1993/94 the site supported a peak mean of 7476 teal (5.3% of the British and 1.9% of the north-west European population) and 36565 lapwing (exceeding 20000 threshold for a wetland of international importance).	***Ramsar criterion 2:*** The site support 17 species of red data book invertebrates, the vascular plants *Wolffia arrhizal*, *Hydrocharis morsus-ranae* and *Peucedanum palustre* considered vulnerable. ***Ramsar criterion 5:*** **Assemblages of international importance:** **Species with peak counts in winter:** 97,155 waterfowl (5 year peak mean 1998/99-2002/2003) ***Ramsar criterion 6 – species/populations occurring at levels of international importance:*** **Qualifying Species/populations (as identified at designation):** **<u>Species with peak counts in winter:</u>** **Eurasian teal, *Anas crecca*, NW Europe** 21,231 individuals, representing an average of 4.2% of the population (5-year peak mean 1998/9-2002/3) **Northern lapwing *Vanellus vanellus*, Europe – breeding** 36,580 individuals, representing an average of 1.8% of the population (5-year peak mean 1998/9-2002/3) **<u>Species/populations identified subsequent to designation for possible future consideration under criterion 6</u>:** **Eurasian wigeon *Anas Penelope*, NW Europe** 25,759 individuals, representing an average of 1.7% of the population (5-year peak mean 1998/9-2002/3) **Mute swan *Cygnus olor*, Britain** 842 individuals, representing an average of 2.6% of the population (5-year peak mean 1998/9-2002/3) **Northern pintail *Anas acuta*, NW Europe** 927 individuals, representing an average of 1.5% of the population (5-year peak mean 1998/9-2002/3) **Northern shoveler *Anas clypetea*, NW & C Europe** 1,094 individuals, representing an average of 2.7% of the population (5-year peak mean 1998/9-2002/3)	**Water Dependent?** Yes
Current conservation status	**A037 *Cygnus columbianus bewickii;* Bewick's swan** (type: wintering, size: minimum 280; maximum 280 (3.9% of the population 5-year peak mean 1991/92 – 1995/96), unit: individuals, data quality: good, population: 2 - 15%, isolation: population not isolated within extended distribution range), short-term trend: decreasing; long-term trend: decreasing. **A140 *Pluvialis apricaria*; European golden plover** (type: wintering, size: minimum 3029, maximum 3029 (1.2% of the GB population 5-year peak mean 1991/92-1995/96), unit: individuals, data quality: good, population: <2%, isolation: population not isolated within extended distribution range), short-term trend: decreasing; long-term trend: increasing. **A052 *Anas crecca*; Eurasian teal** (type; wintering, size: minimum 13307, maximum 13307 (3.3% of the population 5-year peak mean 1991/92-1995/96), unit: individual, data quality: good, population:>2-15%, isolation: population not-isolated within extended distribution range), short-term trend: stable; long-term trend: decreasing. **A142 *Vanellus vanellus*; Northern lapwing** (type; wintering, size: minimum 36316, maximum 36316 (0.5% of the population 5-year peak mean 1991/92-1995/96), unit: individual, data quality: good, population:>2-15%, isolation: population not-isolated within extended distribution range), short-term trend: decreasing; long-term trend: increasing.		
Conservation objectives:	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.		
SSSI condition assessment:	Catcott Edington and Chilton Moors SSSI: unfavourable declining 98.53%, partially destroyed 1.47% Curry and Hay Moors SSSI: unfavourable- declining 100% King's Sedgemoor SSSI: unfavourable- declining 100% Moorlinch SSSI: 100% Shapwick Heath SSSI: favourable 73.24%, unfavourable-declining 26.76% Southlake Moor SSSI: unfavourable- declining 100% Tealham and Tadham Moors SSSI: 100% West Moor SSSI: unfavourable- declining 100% West Sedgemoor SSSI: unfavourable- declining 100% Westhay Heath SSSI: favourable 100% Westhay Moor SSSI: favourable 21.48%, unfavourable- recovering 2.59%, unfavourable- no change 12.18%, unfavourable- declining 59.92%, partially destroyed 3.83% Wet Moor SSSI: unfavourable- declining 100%		
Site Improvement Plan (only threats and actions relevant to the WRMP):	• Drainage – Pressure- A037 Bewick's swan, A050 Wigeon, A056 Shoveler, A140 European golden plover, A052 Eurasian teal, A142 Northern lapwing, waterbird assemblage – Water levels managed for SPA birds • Inappropriate water levels – Pressure - A037 Bewick's swan, A050 Wigeon, A056 Shoveler, A140 European golden plover, A052 Eurasian teal, A142 Northern lapwing, waterbird assemblage – Reduce impacts of deep and prolonged flooding • Maintain and upgrade water management structures – Pressure - A037 Bewick's swan, A050 Wigeon, A056 Shoveler, A140 European golden plover, A052 Eurasian teal, A142 Northern lapwing, waterbird assemblage – Restore hydrology by upgrading and maintaining water management infrastructure		

European Site name:	Somerset Levels and Moors SPA (UK9010031) and Ramsar (UK11064)		
	• Change in land management – Threat - A037 Bewick's swan, A050 Wigeon, A056 Shoveler, A140 European golden plover, A052 Eurasian teal, A142 Northern lapwing, waterbird assemblage – Secure appropriate land management for conservation, by maintaining good working relationships with landowners • Agricultural management practices – Threat - A037 Bewick's swan, A050 Wigeon, A056 Shoveler, A140 European golden plover, A052 Eurasian teal, A142 Northern lapwing, waterbird assemblage – Maintain and improve the drove network, to provide the necessary access for farming activities • Peat extraction – Pressure - A037 Bewick's swan, A050 Wigeon, A056 Shoveler, A140 European golden plover, A052 Eurasian teal, A142 Northern lapwing, waterbird assemblage – Cessation of peat extraction, to curtail adverse impacts • Public access/ disturbance – Pressure - A037 Bewick's swan, A050 Wigeon, A056 Shoveler, A140 European golden plover, A052 Eurasian teal, A142 Northern lapwing, waterbird assemblage – Minimise disturbance to wintering birds • Offsite habitat availability/ management – Threat - A037 Bewick's swan, A050 Wigeon, A056 Shoveler, A140 European golden plover, A052 Eurasian teal, A142 Northern lapwing, waterbird assemblage – Improve the knowledge of off-site habitat function and use by the SPA bird assemblage		
Option name	**Screening Assessment**	**Likely significant effect (LSE) alone?**	**If no LSE alone: Residual low-level effect requiring in-combination assessment**
Option P01_01: Charterhouse	This option is located approximately 9.6km north of Somerset Levels & Moors SPA/Ramsar. Option P01_01 will require low lift pumps from the Upper Springs to the treatment works and an extension of the treatment process for the additional 0.74 Ml/d. This option will use existing raw water mains from the Upper and Lower Springs, however there are some uncertainties if work to the water mains will be required. Potential impact pathways with regards to the qualifying feature of Somerset Levels & Moors SPA/Ramsar include 1) drainage, 2) inappropriate water levels, 3) change in land management, 7) disturbance 8) offsite habitat availability. Due to the distance between the option and the SPA/Ramsar (9.6km) and due to the lack of hydrological connectivity construction works are not anticipated to result in impacts on the qualifying features of the SPA/Ramsar. As per the supplementary document: '*land of functional importance on the floodplain outside the SPA boundary includes arable land, species-poor grassland, species-rich grassland and a variety of wetlands habitats in nature conservation reserves'*. Therefore, construction works is not anticipated to be located within functional and supporting habitat for the qualifying features of the SPA/Ramsar. The operation of the option may result in changes to groundwater, however due to the distance and amount of water to be abstracted, no impacts are anticipated upon the SPA/Ramsar nor on supporting habitats which may be present within proximity to the option's location. Therefore, LSE from construction and operational activities, have been ruled out at this stage and no further assessment will be required.	No	Yes
Option R016: Huntspill Transfer	This option is approximately 0.2km, north of Somerset Levels & Moors SPA/Ramsar. Option R016 will involve the transfer of water from the Huntspill River/Kings Sedgemoor drain during the winter period to provide support to Cheddar Reservoir during dry winter periods. The option will require the construction of a 19km pipeline to Axbridge, upgrade of the infrastructures at Axbridge TW on an additional land and a short pipeline from Axbridge to Cheddar reservoir. Potential impact pathways with regards to the qualifying feature of Somerset Levels & Moors SPA include 1) drainage, 2) inappropriate water levels, 3) change in land management, 7) disturbance 8) offsite habitat availability. Construction works may result in impacts to supporting non-breeding/wintering habitats if present within the project footprint, through habitat loss, degradation and disturbance (visual disturbance, noise, air pollution, dust, surface pollution incidents). As per the supplementary document: '*land of functional importance on the floodplain outside the SPA boundary includes arable land, species-poor grassland, species-rich grassland and a variety of wetlands habitats in nature conservation reserves'*. Furthermore, the operation of the option will require the transfer of water from the Huntspill River which may result in minor discernible changes to groundwater and surface water levels and may impact supporting habitats. Therefore, LSE from construction and operational activities, cannot be ruled out at this stage and further assessment will be required through a Stage 2 Appropriate Assessment.	Yes	N/A
Option R24: Honeyhurst	This option is approximately 4.9km, north of Somerset Levels & Moors SPA/Ramsar. Option R24 will involve the refurbishment of Honeyhurst Well to bring it back into service and pump water from Honeyhurst to Cheddar WTW. This option would involve the construction of a new pumping station at the Honeyhurst site and a new 4.2km pipeline. There are no further requirements to upgrade Cheddar TW. Potential impact pathways with regards to the qualifying feature of Somerset Levels & Moors SPA include 1) drainage, 2) inappropriate water levels, 3) change in land management, 7) disturbance 8) offsite habitat availability. Construction works may result in impacts to supporting non-breeding/wintering habitats if present within the project footprint, through habitat loss, degradation and disturbance (visual disturbance, noise, air pollution, dust, surface pollution incidents). As per the supplementary document: '*land of functional importance on the floodplain outside the SPA boundary includes arable land, species-poor grassland, species-rich grassland and a variety of wetlands habitats in nature conservation reserves'*. Furthermore, the operation of the option will require water abstraction at Honeyhurst which may result in minor discernible changes to groundwater levels and impacts to supporting habitats if present. Therefore, LSE from construction and operational activities, cannot be ruled out at this stage and further assessment will be required through a Stage 2 Appropriate Assessment.	Yes	N/A
Option P06: Mendip Lakes	This option is approximately 7.9km, north of Somerset Levels & Moors SPA/Ramsar. Option P06 is to continue the established programme of catchment management to reduce nutrient loads. The programme involves the implementation of the catchment grant scheme to support farms to improve their infrastructure and reduce diffuse pollution risk. This option will not require construction works nor new water abstraction licence, however the yield benefit is estimated to be an average of 0.7Ml/d. Potential impact pathways with regards to the qualifying feature of Somerset Levels & Moors SPA include 1) drainage, 2) inappropriate water levels, 3) change in land management, 7) disturbance 8) offsite habitat availability. Due to the lack of construction works in relation to option P06, no LSE are anticipated from construction activities. Due to the distance and lack of hydrological connectivity between the option and SPA/Ramsar, operational activities which may result in additional water abstraction, is not considered likely to result in impacts upon the	No	No

European Site name:	Somerset Levels and Moors SPA (UK9010031) and Ramsar (UK11064)		
	SPA/Ramsar. Therefore no LSE from construction and operation activities are anticipated from option P06 upon the habitat qualifying features of the SPA/Ramsar. No residual impacts are anticipated upon the SPA/Ramsar, therefore no in-combination LSE are anticipated		
Option R005: Cheddar Reservoir	This option is approximately 4.8km, north-east of the Somerset Levels & Moors SPA. Option R005 is based on option Cheddar 2 as developed within WCN SRO. This option includes the construction of a second reservoir at Cheddar (capacity c.9000Ml so surface area of 868000m^2) with associated infrastructure and a new dedicated WTW. The reservoir would be filled alongside the existing reservoir and within the existing abstraction licence at Cheddar Springs and on the River Axe. Infrastructure required would include WTW, a 6.5km raw water main, a 48km potable water main and 6 pumping stations. Potential impact pathways with regards to the qualifying feature of Somerset Levels & Moors SPA include 1) drainage, 2) inappropriate water levels, 3) change in land management, 7) disturbance 8) offsite habitat availability. There is potential of direct loss of functionally linked habitat to the Somerset Level and Moors SPA populations during construction. Increased sediment loading and exposure to pollution incidents in watercourses hydrologically connected to the SPA may have negative impacts on the designated species. There is potential for the deterioration of supporting habitats during the operation of the new reservoir. Terrestrial habitats present within the proposed footprint of Cheddar 2 Reservoir could be lost or affected by the creation of the reservoir impacting these species. No LSE are anticipated from the operation of the scheme as any increases in abstraction from the River Yeo are anticipated to be within the limits of the current abstraction licence. Meaning the impact to water dependent habitats downstream are anticipated to be negligible. Therefore LSE from construction cannot be ruled out and further assessments are required through a Stage 2 Appropriate Assessment.	Yes	N/A

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