

United Utilities Sources – HRA Environmental Assessment Report

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United Utilities Sources Strategic Resource Options Review of Options Against the Habitats Regulations

1. Introduction

- 1.1.1 Water companies, regulators and the UK Government have identified 17 Strategic Water Resource Options (SRO) to address the water needs set out in the National Framework for Water Resources¹.
- 1.1.1 The United Utilities Sources (UUS) SRO is being delivered by United Utilities (UU) and is one of three SROs that the water company is participating in, the others being United Utilities Vyrnwy Aqueduct (UUVA) and Severn to Thames Transfer (STT). Although these schemes are separate SROs, they complement each other to enable water to be transferred from North West England to the Midlands and South.
- 1.1.2 The Regulators' Alliance for Progressing Infrastructure Development (RAPID) has requested information from water companies to support any SROs as part of their respective Gate 1 submissions (July 2021). To meet the Gate 1 submission environmental requirements², the UUS SRO must be subject to a range of environmental assessments. As part of this process, UU commissioned Wood Environment and Infrastructure Solutions Ltd (Wood) to assist with the assessment of the SRO options against the provisions of Regulation 63³ of *The Conservation of Habitats and Species Regulations 2017* (as amended) (the 'Habitats Regulations'), a process known as 'Habitats Regulations Assessment' (HRA).
- 1.1.3 **This Technical Note summarises Wood's review of the UUS SRO 'feasible options' being taken forward at Gate 1 against the requirements of the Habitats Regulations.** It has used an assessment methodology applied to the water resource management options developed in support of UU's Water Resources Management Plan 2019 (WRMP19)⁴.
- 1.1.4 The Technical Note may be used to support consultations with the statutory authorities although it is not a 'draft HRA', 'screening', or similar assessment of the UUS SRO (as a preferred solution has not been identified at this stage) and is not intended to provide a definitive conclusion on the likely effects of the SRO (or its contribution to the effects associated with WRMP24 and the Regional

¹ Environment Agency (2020) *Meeting our future water needs: a national framework for water resources*. Available from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/872759/National_Framework_for_water_resources_main_report.pdf [Accessed September 2020].

² See Ofwat (2019) *PR19 final determinations: Strategic regional water resource solutions* and RAPID (2020) *Accelerated Gate One Assessment –summary of process and criteria Version 2*.

³ WRMPs and Regional Plans are not specifically identified as a 'plan' requiring consideration under the Habitats Regulations, although the provisions of Regulation 62 apply the assessment requirements of Regulation 63 to plans and projects that are not specifically cited in Part 6 of the Regulations. Furthermore, European Commission guidance (EC 2018. *Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*) and case law support a broad interpretation of the term 'plan' when used in the context of the Habitats Directive and it is not considered appropriate to limit the scope or applicability of Article 6(3) according to the type of document at hand. A 'plan' is therefore typically considered to be any formal statement or similar requiring authorisation (other than general statements of policy or aspiration) that identifies an intended course of action, or which sets out how an activity or action might be planned, delivered or regulated.

⁴ United Utilities (2019) *Final Water Resources Management Plan 2019*. Available from https://www.unitedutilities.com/globalassets/z_corporate-site/about-us-pdfs/wrmp-2019---2045/final-water-resources-management-plan-2019.pdf [Accessed March 2021].





Plans). Rather, it is primarily intended to inform UU's selection of a preferred solution for the UUS SRO, by identifying:

- those options that would appear to have an unavoidable risk of adverse effects on European sites (and which should not therefore be pursued, if possible);
- those options where significant or adverse effects would not appear likely, assuming established avoidance and mitigation measures⁵ can be employed at the scheme level; and
- those options where effects are currently uncertain, which would require additional data or information on operation or construction to inform the HRA completed for UU's Gate 2 submission to RAPID and support a robust HRA of the forthcoming WRMP24 and Regional Plans.

2. United Utilities Sources Strategic Resource Option and RAPID's Requirements

2.1 United Utilities Strategic Resource Option

2.1.1 The UUS SRO is one of 17 schemes promoted by Ofwat in the PR19 Final Determination² to identify new strategic water resources to address the water needs set out in the National Framework for Water Resources⁶. The SRO programme is managed by RAPID and governed through a gated process during AMP7 with the purpose of selecting the strategic resource options which provide best value for customers for delivery in AMP8. The gates are:

- **Gate 1:** Initial concept design and decision making;
- **Gate 2:** Detailed feasibility, concept design and multi-solution decision making;
- **Gate 3:** Developed design, finalised feasibility, pre-planning investigations and planning applications;
- **Gate 4:** Planning applications, procurement and land purchase.

2.1.2 Gate 1 of this process takes place in July 2021 and involves initial concept design and decision making. The Gate 1 decision, if supportive, will provide further funding for development of the schemes and the selected options will be included in the plan development process for the Regional Plans and WRMP24.

2.1.3 The purpose of the UUS SRO, alongside the UUVA SRO, is to support the STT SRO proposal to transfer up to 180 mega litres per day (ML/d) of water from Lake Vyrnwy to the Thames Water region via the River Severn by maintaining supply resilience to UU customers if water were to be transferred out of region.

2.1.4 Source options for the UUS SRO have been evaluated in terms of their benefits and costs and subject to environmental assessment in accordance with RAPID's Gate 1 requirements. This process has informed the selection of a preferred list of 27 options for the SRO including groundwater

⁵ See also Section 2.2 in relation to the consideration of mitigation and 'People over Wind'.

⁶ Environment Agency (2020) *Meeting our future water needs: a national framework for water resources*. Available from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/872759/National_Framework_for_water_resources_main_report.pdf [Accessed September 2020].





enhancement, improved reservoir release control, local interconnection and treatment, and river abstraction. The preferred list of options is presented in **Section 2** of this Technical Note.

- 2.1.5 It should be noted that, at this stage, the preferred options for the UUS SRO have not been selected. The options will be selected by Gate 2 (October 2022) with those ultimately chosen being dependent upon further investigation, assessment and the volume of water required for trading.

2.2 RAPID's Environmental Requirements

- 2.2.1 RAPID has requested environmental information from water companies to support their respective SROs as part of the Gate 1 submission (July 2021). To meet RAPID's Gate 1 submission requirements⁷, UU is to provide the following information for the UUS SRO options being taken forward:

- Initial option-level environmental assessments that meet local requirements and Strategic Environmental Assessment (SEA) and Habitats Regulations Assessments (HRA) requirements, including appropriate consideration of in-combination effects and identification of environmental risks that need mitigating through the solution design and costing.
- Initial environmental, social, and economic valuations (or metric benefits) consistent with principles in the National Planning Statement and Water Resource Planning Guidelines.

- 2.2.2 To meet RAPID's requirements, the following environmental assessments are being completed:

- Strategic Environmental Assessment⁸ (SEA);
- Habitats Regulations Assessment⁹ (HRA);
- Water Framework Directive (WFD) Screening Assessment¹⁰;
- Natural Capital Assessment (NCA);
- Biodiversity Net Gain (BNG) Assessment;
- Invasive Non-native Species (INNS) Risk Assessment.

⁷ See Ofwat (2019) *PR19 final determinations: Strategic regional water resource solutions* and RAPID (2020) *Accelerated Gate One Assessment –summary of process and criteria Version 2*.

⁸ *Statutory Instrument No.1633 - The Environmental Assessment of Plans and Programmes Regulations 2004*.

⁹ *Statutory Instrument No.1012 - Conservation of Habitats and Species Regulations 2017*.

¹⁰ *Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (the Water Framework Directive)*.





3. HRA in Strategic Water Resource Planning

3.1 Context

- 3.1.1 Water company plans and programmes are subject to the provisions of Regulation 63¹¹ of *The Conservation of Habitats and Species Regulations 2017* (as amended) (the 'Habitats Regulations'). The Regulation 63 tests are typically addressed through a staged process known as a 'Habitats Regulations Assessment' (HRA)¹²; this assessment determines whether there will be any 'likely significant effects' (LSE) on any European site¹³ or European offshore marine site¹⁴ as a result of a plan's implementation (either on its own or 'in combination' with other plans or projects)¹⁵ and, if so, whether there will be any 'adverse effects on site integrity'¹⁶. The water company (in this case UU) has a statutory duty to prepare a WRMP (in which the SRO options will also appear) and is therefore the Competent Authority for the HRA of that plan.
- 3.1.2 The draft Water Resources Planning Guideline¹⁷ provides a framework for the development of WRMPs; as the options for the UUS SRO are also likely to be considered in WRMP24 and Regional Plan development, it is important that the Guideline is taken into account. The Guideline confirms the requirement for HRA of WRMPs and states that "*HRA should be seen as an interactive process throughout the plan's development*". Reflecting the draft Water Resources Planning Guideline, the All Company Working Group (ACWG) has developed guidance¹⁸ on environmental assessment for SROs; this indicates that the principles of HRA should be used to inform water company Gate 1 submissions.
- 3.1.3 The National Assessment Unit (NAU), which includes representatives from the Environmental Agency (EA) and Natural England (NE), has been established to provide strategic advice and guidance to water companies on environmental matters pertaining to the SROs, including the UUS SRO. Both the NAU and Natural Resources Wales (NRW) have also confirmed that their Gate 1

¹¹ WRMPs and Regional Plans are not specifically identified as a 'plan' requiring consideration under the Habitats Regulations, although the provisions of Regulation 62 apply the assessment requirements of Regulation 63 to plans and projects that are not specifically cited in Part 6 of the Regulations. Furthermore, European Commission guidance (EC 2018. *Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*) and case law support a broad interpretation of the term 'plan' when used in the context of the Habitats Directive and it is not considered appropriate to limit the scope or applicability of Article 6(3) according to the type of document at hand. A 'plan' is therefore typically considered to be any formal statement or similar requiring authorisation (other than general statements of policy or aspiration) that identifies an intended course of action, or which sets out how an activity or action might be planned, delivered or regulated.

¹² The HRA may also cover the Regulation 64 tests, if required (see Stage 2, Box 1). Note that the term 'Appropriate Assessment' is sometimes used interchangeably with 'HRA', although it is preferable to refer to the overall process as HRA, with the term 'Appropriate Assessment' limited to a specific stage within the process; this is the convention followed in this report.

¹³ Strictly, 'European sites' are: 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') apply; and to possible SACs (pSACs) and listed Ramsar Sites, to which the provisions of the Habitats Regulations are applied a matter of Government policy (National Planning Policy Framework para. 176) when considering development proposals that may affect them. "European site" is therefore used in its broadest sense, as an umbrella term for all of the above designated sites.

¹⁴ '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.

¹⁵ Also referred to as 'screening', or the 'test of significance'.

¹⁶ Also referred to as the 'integrity test'.

¹⁷ Environment Agency, Ofwat and Natural Resources Wales (2020) *Water Resources Planning Guideline Draft for consultation – July 2020*.

¹⁸ Mott MacDonald (2020) *All Companies Working Group WRMP environmental assessment guidance and applicability with SROs*.





expectations include for HRA requirements to be considered in the initial environmental assessments completed for the UUS SRO.

3.2 Overview of Approach

- 3.2.1 The key guidance document for HRA of WRMPs is UKWIR (2021) *Environmental Assessment Guidance for Water Resources Management Plans And Drought Plans*. UK Water Industry Research Limited, London.
- 3.2.2 The HRA process is typically divided into four stages, based on European Commission guidance¹⁹ (see **Box 1**), although not all stages will necessarily be required²⁰. The stages in **Box 1** are used to ensure compliance with the Regulations and principally reflect the stepwise legislative tests applied to the final, submitted project or plan; there is no statutory requirement for HRA to be completed for draft plans or similar developmental stages. The rigid application of these 'tests' to the emerging or interim stages of strategic plans²¹ is therefore not always appropriate, and often reduces the clarity and usefulness of the HRA as a plan-shaping process. For Regional Plans, WRMPs and the SROs this is especially true of the assessment of the feasible options and 'screening' in light of the 'People over Wind' (PoW)²² case (which requires that mitigation is not taken into account at the HRA screening stage)²³.
- 3.2.3 Therefore, although HRAs typically reflect the stages outlined in **Box 1**, there is inherent flexibility for the HRA *process* to be run in an iterative manner that provides maximum benefit for the plan-making process, and which contributes to transparent and sound decision-making.
- 3.2.4 In practice, therefore, HRAs of strategic water resource plans usually have two functional components: they informally guide each water company as it considers which water resource options will be included in the published plan (with the aim of avoiding those proposals that are likely to fail the Regulation 63 tests at the project-level); and subsequently provide a formal assessment of the published plan against Regulation 63. These broad functional components apply in the context of the UUS SRO also.

¹⁹ *Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (EC 2002).

²⁰ Stages 3 and 4 relate to the tests of Regulation 64, which are only required if 'adverse effects on site integrity' cannot be excluded.

²¹ Particularly those (such as WRMPs) where the guideline HRA stages do not map easily on to the agreed or statutory stages in the plan development process.

²² *People Over Wind and Sweetman v Coillte Teoranta* (C-323/17)

²³ The assessment of feasible options (as part of the HRA, or the SEA, or another assessment) is primarily intended to guide the water company's selection of preferred options. Applying a PoW-compliant 'screening' assessment to the revised feasible options would therefore have little value for plan-development since mitigation opportunities, including effective and well-established measures for marginal effects, would be ignored. All options with 'likely significant effects' would therefore be treated equally, with no distinction between options that would (from an HRA perspective) be easily achievable in practice and those that would be extremely challenging or impossible to deliver without adverse effects.





Box 1 – Stages of HRA

Stage 1 – Screening or ‘Test of Significance’

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

Stage 2 – Appropriate Assessment (including the ‘Integrity Test’)

An ‘appropriate assessment’ (if required) involves a closer examination of the plan or project where the effects on relevant European sites are significant or uncertain, to determine whether any sites will be subject to ‘adverse effects on integrity’ if the plan or project is given effect. The scope of any ‘appropriate assessment’ stage is not set, and the assessments will not be extremely detailed in every case (particularly if mitigation is clearly available, achievable and likely to be effective): they must be ‘appropriate’ to the effects and proposal being considered, and sufficient to ensure that there is no reasonable doubt that adverse effects on site integrity will not occur (or sufficient for those effects to be appropriately quantified should Stages 3 and 4 be required).

Stage 3 – Assessment of Alternative Solutions

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

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

This stage assesses compensatory measures where it is deemed that there are no alternatives that have no or lesser adverse effects on European sites, and the project or plan should proceed for IROPI. The EC guidance does not deal with the assessment of IROPI.

3.2.5 The HRA process (as applied to the water resource management options identified for the UUS SRO) therefore includes the following steps:

- An initial review²⁴ of the initial feasible options identified for the UUS SRO, to assist UU in identifying those options to be taken forward at Gate 1; this applies the normal principles and practices associated with ‘HRA screening’ but also takes account of the deliverability of the options including potential mitigation opportunities.
- A further review of the UUS SRO feasible options being taken forward at Gate 1 to take into account regulator feedback on the options (see **Section 4.2**) (this report); this will support UU’s selection of the preferred solution post-Gate 1; again, this applies the normal principles and practices associated with ‘HRA screening’ but also takes account of the deliverability of the options from an HRA perspective including potential mitigation opportunities. _
- A formal assessment of the preferred solution (once identified) for the UUS SRO, comprising formal screening and (where necessary) an ‘appropriate assessment’ of the preferred option(s) that make up the solution, that will accompany UU’s Gate 2 submission to RAPID and WRMP24/Regional Plan consultations.

²⁴ Wood (2021) *United Utilities Sources and Vyrnwy Aqueduct Strategic Resource Options Initial Review of Options Against the Habitats Regulations*.





- A formal assessment of the post-consultation revised preferred solution, which would be intended for adoption as part of WRMP24/the Regional Plans.
- A formal assessment of the final options in the adopted plans.
- Further, project-level assessment during Gates 3 to 5, as necessary.

3.2.6 In this context, a 'modular' approach to the HRA of the UUS SRO options is employed, involving a series of task-focused reports, technical notes and consultations that are intended to support and inform key stakeholders and UU's decision making at Gates 1 and 2 of the RAPID gated process and at each stage of WRMP/Regional Plan development; these are then brought together to provide a comprehensive and transparent HRA Report (which may comprise just 'screening' or 'screening' and 'appropriate assessment' depending on the SRO solution) that will accompany the Gate 2 submission to RAPID and the submission versions of WRMP24 and the Regional Plans.

3.2.7 In accordance with the ACWG guidance, following publication of the final WRMP24/Regional Plans it is anticipated that further detailed project-level HRA will be undertaken of the preferred solution as the scheme (and composite options) progress beyond Gate 2, as part of the consenting/permitting process.

4. Review of United Utilities Sources SRO Options

4.1 Overview

4.1.1 The options for the UUS SRO being taken forward at Gate 1 have been selected following a process of options identification and appraisal. UU initially identified a long list of possible options that were subject to an initial round of assessment to identify a total of 37 feasible options for the SRO. These feasible options were then assessed in terms of their Average Incremental Cost (AIC), modelled to determine their water resource benefit and subject to initial environmental assessments including a review using the principles of HRA. Taking into account the AIC and the findings of the initial environmental assessments, as well as ongoing engagement with stakeholders, a preferred list of 27 options for the UUS SRO was identified. These options are summarised in **Table 2.1**.

Table 4.1 UUS SRO options

Option No.	Gate 1 Ref	Option Name	Summary Description
STT019	24	Transfer from Wirral to Liverpool via Mersey Tunnel	[✂]
STT029	6	River Lune Transfer	[✂]
STT034	11	Hollingworth Lake	[✂]
STT041	13	Heaton Park	[✂]
WR001	14	River Alt to Prescott WTW	[✂]





Option No.	Gate 1 Ref	Option Name	Summary Description
WR010	5	River Greta River Wenning to Lancaster	[✂]
WR049b	9	Abstraction from Ribble (lower) - Rivington	[✂]
WR076	25	New river abstraction, Upper Mersey (e.g. Bollin @ Lymm)	[✂]
WR099b	8	Worsthorne BH	[✂]
WR101	7	Franklaw BHs	[✂]
WR102b	17	Widnes BH Group	[✂]
WR102e	15	Bold Heath BHs	[✂]
WR105a	18	Lymm BH and WTW	[✂]
WR107b	12	Randles Bridge (Royal Oak).	[✂]
WR112	21	Bramhall Borehole	[✂]
WR113	19	Tytherington BH	[✂]
WR123	23	Helsby and Foxhill BHs PBD	[✂]
WR141	10	New river abstraction, River Irwell (e.g. Medlock)	[✂]
WR149	16	Lightshaw increased WTW capacity (SW)	[✂]





Option No.	Gate 1 Ref	Option Name	Summary Description
WR153	20	Simmonds Hill WTW (Manley Quarry BH)	[✂]
WR154	22	Sandiford Increased Capacity	[✂]
WR159	2	Individual Reservoirs Compensation Release Control	[✂]
WR810	3	Cow Green to Heltondale	[✂]
WR812	1	Kielder to Heltondale	[✂]
WR814a	26	Increased treatment capacity at Huntington WTW	[✂]
WR815	4	Killington Reservoir to Thirlmere Aqueduct	[✂]
WR821	27	Llangollen Canal	[✂]

4.2 Review of Options

- 4.2.1 Each of the UUS SRO options have been assessed using broadly the same assessment methodology employed for UU's draft WRMP19 feasible options, as set out in detail in the accompanying HRA Report²⁵.
- 4.2.2 As noted, the stages in **Box 1** are intended to reflect the stepwise legislative tests in the Habitats Directive (and hence the *Conservation of Habitats and Species Regulations 2017* (as amended)) and so their rigid application to the emerging or interim stages of strategic plans is not always appropriate or beneficial to the plan-making process. As there is no statutory requirement for HRA to be completed for draft plans or similar developmental stages, the specific legislative tests associated with Regulation 63 will be applied formally to UU's preferred UUS SRO solution only, once this has been identified (post-Gate 1). A more flexible assessment approach is therefore used for the review of the options, assumed to have an equivalence to the 'feasible options assessment'

²⁵ Wood (2019) Final Water Resources Management Plan 2019: Habitats Regulations Assessment Screening and Appropriate Assessment. Available from https://www.unitedutilities.com/globalassets/z_corporate-site/about-us-pdfs/wrmp-2019---2045/final-water-resources-management-plan-2019-habitats-regulations-assessment.pdf [Accessed March 2021].





in the context of WRMP19, that is primarily intended to provide robust, proportionate and pragmatic information for UU to factor into its option selection process.

4.2.3 The review of the UUS SRO options is not, therefore, a surrogate 'screening' (for clarity, it is preferable to not use that term except in its proper legislative context for final HRA reports) and takes into account potential mitigation opportunities and established best-practice measures when considering the likely effects of an option, which would not be acceptable for a formal 'screening' (see **Box 1** in relation to 'People over Wind'). The established data and assessment principles that underpin screening and appropriate assessment are therefore applied to the options to:

- guide the selection of the preferred option(s) that will comprise the UUS SRO solution by UU;
- inform UU's ongoing consideration of mitigation measures and, in-turn, detailed scheme design;
- provide early consideration of potential in-combination effects;
- inform the scope of any further assessments likely to be required as the options are refined and developed, including any HRA-related data and investigations needed to support the selection of an option as a preferred option; and
- provide an opportunity for the statutory consultees (including the NAU) to review the HRA methods and assumptions at Gate 1, and identify any other potential effects they are aware of that may need consideration in relation to particular options.

4.2.4 The HRA options review identifies the location and the anticipated outcomes of each option through construction and operation, based on the option descriptions provided by UU. GIS is then used to identify all European sites within a precautionary 20km 'zone of influence', with sites beyond this considered where reasonable impact pathways are present based on the scheme description (for example, receptors downstream of significant new abstractions). This is a suitably precautionary approach that has important advantages due to the number of options being taken forward at Gate 1 and the benefits of a consistent approach²⁶. The possible effects of each option on European sites and their interest features are then assessed, based on:

- the anticipated operation of each option and predicted zone of hydrological influence²⁷;
- any predicted construction works required for each option²⁸;

²⁶ 'Arbitrary' buffers are not generally appropriate for HRA. However, as distance is a strong determinant of the scale and likelihood of most effects, the considered use of a suitably precautionary search area as a starting point for the screening (based on a thorough understanding of both the options and European site interest features) has some important advantages. Using buffers allows the systematic identification of European sites using GIS, so minimising the risk of sites or features being overlooked, and also ensures that sites where there are no reasonable impact pathways can be quickly and transparently excluded from any further screening or assessment. When assessing multiple options it also has the significant advantage of providing a consistent point of reference for consultees following the assessment process, and the 'screening' can therefore focus on the assessment of effects, rather than on explaining why certain sites may or may not have been considered in relation to a particular option.

²⁷ Note that for groundwater sources and groundwater fed habitats, the EA considers that significant effects as a result of ground water abstractions are unlikely on European sites over 5 km from the abstraction (National EA guidance: *Habitats Directive Stage 2 Review: Water Resources Authorisations – Practical Advice for Agency Water Resources Staff*). This premise is applied to the option assessments.

²⁸ Note that the location of some works, particularly pipelines outside UU-owned land, are only tentatively defined in the feasible options descriptions. In these instances, the 'to' and 'from' locations were identified and a broad study area used to identify any European sites that could potentially be affected by a route between these locations.





- the European site interest feature²⁹ characteristics, distributions and sensitivities (based on site citations, Site Improvement Plans (SIPs), management plans (NRW, information on the condition of the underlying Sites of Special Scientific Interest (SSSIs), information on any 'functionally linked' sites or habitats; the Conservation Objectives for the sites, and any 'supplementary advice' provided by NE or NRW); and
- the exposure of the site or features to the likely effects of the option (i.e. presence of reasonable impact pathways).

- 4.2.5 Note, the review of the UUS SRO options takes account of established project-level avoidance and mitigation measures that are known to be achievable, available and likely to be effective – for example, normal construction best-practice or standard project planning. Examples of these measures are identified in **Appendix B** to this Technical Note. It is considered (based on professional experience) that most potential construction effects can almost certainly be avoided or mitigated at the project-level using these measures or similar construction best practice³⁰.
- 4.2.6 For the operational aspects of the options, potential avoidance measures will be considered where these are apparent, although in most instances the mitigation likely to be required for an option (e.g. compensation releases; 'hands-off' flows) cannot necessarily be determined at this stage, and may not be identifiable without substantial additional investigation or input from UU post-Gate 1.
- 4.2.7 From an operational perspective, the review also cautiously assumes that the existing licensing regime is having no adverse effects on any European sites³¹ and that options that are 'network solutions' only (i.e. moving spare licensed volumes or reinstating licensed but unused boreholes) will not generally have operational effects beyond those that may be associated with any consequent inter-basin raw- or treated-water transfers that might be required. The UUS SRO options will, therefore, be most likely to affect European sites where they involve an increase in existing licensed volumes, changes in licence operation, or the introduction of new abstractions. It is also assumed (subject to consultation with the EA and NRW) that there is a reasonable prospect or evidence that the proposed abstraction volumes are available for those 'new water' options based on EA Catchment Abstraction Management Strategies (CAMS). However, it is recognised that some of the CAMS ledgers are dated and may not be robust, and that some existing sources are within over-licensed catchments. In this context, the review has additionally drawn on regulator feedback on the options which is discussed further below.
- 4.2.8 Above all, it is important to note, therefore, that the review of the options does not provide a formal or definitive 'screening' and so any conclusions will necessarily be revisited and explored further for the screening and (if necessary) appropriate assessments of the preferred options.
- 4.2.9 It should be noted that the methodologies for the HRA of the WRW Regional Plan and associated water company WRMP24s are (at the time of writing) currently being developed. In consequence, post-Gate 1, there will be a need to review the approach to the HRA of the UUS SRO options to ensure that there is consistency with the methodologies employed for the assessments of the Regional Plan and WRMPs. However, at this stage, it is not anticipated that any such review would materially affect the findings of the assessment presented in this Technical Note.

²⁹ The European site interest features are the qualifying features for which the site is classified under the Habitats Directive (EC Directive 92/43/EEC), the Birds Directive (EC Directive 2009/147/EC) or the Ramsar convention; and the 'typical species' (for SACs) or within-site supporting habitats; note that features that are not part of the site itself (e.g. non-designated habitats outside the site boundary) may also be important for the integrity of the site (and so require consideration, although they may not be categorised as interest features of the site).

³⁰ Although note that this does not remove the need for project-level HRA.

³¹ It is recognised that, occasionally, agreed sustainability reductions have been subsequently shown to be insufficient to address the effects of PWS abstraction on some sites (the most notable example is the River Ehen in Cumbria).





In Combination Effects

- 4.2.10 HRA requires that the effects of other projects, plans or programmes be considered for effects on European sites 'in combination' with the SRO, WRMP24 and Regional Plans. There is limited guidance on the precise scope of 'in combination' assessments for plans and programmes, particularly with respect to the levels within the planning hierarchy at which 'in combination' effects should be considered.
- 4.2.11 The review of the UUS SRO 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; any assessment would be speculative and mostly abortive.
- 4.2.12 However, the review does identify those European sites that are within 20km of two or more options and provides an indication of those sites where pathways for 'in combination' effects may be present based on the 'alone' [X]. It should be noted that in most instances, the options will have 'no effects' on European sites (as opposed to 'no significant effects') – i.e. there is simply no reasonable pathway for effects – and such options cannot therefore have 'in combination' effects.
- 4.2.13 The potential for in combination effects will be reviewed and assessed as the preferred options for the SRO are selected, with a full 'in combination' assessment undertaken of the preferred UUS SRO solution prior to Gate 2. However, UU should be aware of the risks of in combination effects between options [X], and with other plans (e.g. the Drought Plan) when selecting preferred options, particularly where options affect the same catchments or water resources.

Incorporation of Regulator Comments

- 4.2.14 UU has undertaken extensive engagement with regulators (EA, NRW and NE) on the UUS SRO options. Where appropriate, regulator comments on the options identified for the SRO at Gate 1 have been incorporated into this report, typically by either:
- highlighting particular European sites that regulators believe may require specific consideration as the HRA progresses (particularly in relation to in combination effects); and/or
 - amending the review conclusions for particular sites or options to reflect regulator concerns around compliance and deliverability, particularly in relation to surface water quality issues and resource availability.

5. Review Summary

- 5.1.1 [X]. This comprises option-specific proformas that provide a short description of each option and a narrative assessment of its likely effects, with those European sites within 20km (or linked by a reasonable pathway that) identified and possible effect pathways assessed. It then provides broad 'recommendations' regards progressing the options as preferred options based on the anticipated construction and operational effects; the criteria for these recommendations are as follows (colour coded for clarity):





Table 5.1 Summary of criteria for considering UUS SRO Gate 1 options as potential preferred options

Recommend as preferred option?	Notes
Yes	Option appears unlikely to have any effects on European sites as features are either not exposed or not sensitive to the likely outcomes (i.e. no or no reasonable impact pathways – for example, operational effects for a 'construction only' network solution; 'dry' habitats over (say) 2km from an option; sites in different surface water catchments; upstream sites; etc. (being mindful of mobile species)). In these instances, the recommendation is 'Yes', i.e. no reason not to pursue as a preferred option.
Yes	Options where pathways for effects are clearly identifiable (such that HRA would probably be required at the scheme level) but where the potential effects can obviously be avoided or mitigated using established measures that are known to be effective, for example: <ul style="list-style-type: none"> • construction near a European site (effects avoidable with normal project planning and best-practice); • minor works within European sites (e.g. works to existing assets where effects unlikely to be adverse due to absence of features); • major works near / within European sites that can clearly be completed without adverse effects (e.g. crossings of SAC rivers using existing roads or directional drilling); • operational effects that are avoidable with established operational mitigation (e.g. licence controls, although at this stage, potential operational effects will usually lead to an 'uncertain' recommendation to flag the need for additional information). In these instances, the generic measures outlined in Appendix B can be relied on if these are included within the WRMP/Regional Plan/SRO package, although the final plan or project may need to include specific measures for potential 'high-impact' options (e.g. commitments to non-invasive river crossings or timing works to avoid sensitive periods).
Uncertain	Options where a potentially adverse effect is conceivable and cannot be discounted, and the likely effects are therefore uncertain at the Gate 1 stage. This is typically due to limitations on the information available, either in terms of the operation of the scheme, the mitigation that might be employed, or the data available on the interest features of the sites. These options, if pursued as preferred options, may require: <ul style="list-style-type: none"> • additional investigation to determine their effects, and there may be a risk that the risk of effects cannot be quantified satisfactorily at the strategic level (for example, substantial additional modelling or site-specific investigation may be required). • the identification of specific measures or requirements for scheme delivery for inclusion with the WRMP/Regional Plan/SRO. This category is therefore intended as a flag to identify those options where there is potentially additional 'cost' associated with their inclusion (either related to the data required to support a robust HRA and hence the option, the resource and programme time required to resolve the issue to the satisfaction of NE and NRW (as the relevant nature conservation bodies), or the need for specific mitigation commitments) which UU should consider when selecting the preferred options.
No	Options where significant effects (i.e. not negligible or inconsequential) on a European site are very likely or certain due to the scale/ nature/location of the option proposals, or the vulnerability and distribution of the interest features within /near the European site. Although a full appropriate assessment is not undertaken at this stage, adverse effects may be more likely (or even certain) if the scheme is taken forward as a preferred option and it is likely that extensive or unproven mitigation will be required following scheme-level investigations. UUS SRO options in this category are not recommended for consideration as preferred options (although additional information may allow a re-assessment).

5.1.2



Individual Options

5.1.3

In summary, the HRA review has identified that **two options have potentially substantial HRA-related risks associated with them** that may severely constrain delivery, either from a cost or permitting perspective:



- [✂]
- [✂]

5.1.4 Additional information or specificity on the construction and operation of these options will be required to support a suitably robust HRA (if these options are taken forward as part of the preferred solution for the UUS SRO).

5.1.5 A further 12 options have potential pathways for significant effects 'alone', although the risks associated with them are lower (either because most effects are likely to be avoidable or relatively minor, or because the information required to accurately characterise the effect should be relatively simple to obtain):

- [✂]
- [✂]
- [✂]





- [✂]
- [✂]
- [✂]
- [✂]
- [✂]
- [✂]





- [REDACTED]
- [REDACTED]
- [REDACTED]

5.1.6 The remaining 13 UUS SRO options are either unlikely to have significant effects on European sites in their current configuration, or potential effects are likely to be avoidable with normal project-level planning and construction best-practice. However, all potential effects will need to be re-assessed based on the latest available information (including in terms of scheme design) prior to Gate 2, should UU intend to take them forward as preferred options.

In combination effects

5.1.7 As in **Section 4.2**, a detailed in combination assessment has not been undertaken at this stage due to the number of options currently identified for the UUS SRO, the data limitations and the speculative nature of any such assessment. However, the assessments of the options 'alone' have been used as a basis for identifying European sites that are exposed to potentially significant in combination effects [REDACTED].

5.1.8 In summary, the following sites have the potential to be affected by the construction and/or operation of more than one option (depending on which preferred options are selected):

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]





- [✂]
- [✂]
- [✂]
- [✂]
- [✂]
- [✂]
- [✂]
- [✂]

5.1.9 These potential in combination effects will be considered in detail following Gate 1, once the preferred options for the UUS SRO have been selected and as part of the WRMP24/Regional Plan process. However, there is nothing to suggest that particular combinations of options will result in unavoidable adverse effects 'in combination' on any sites, and in most instances the effects of individual options will be localised and minor with limited risks of notable interaction with other options

6. Next Steps

6.1.1 The review of the UUS SRO options presented in this Technical Note is not a formal screening assessment or definitive conclusion; further examination of the likely effects of the UUS SRO options will be required to clearly demonstrate 'no likely significant effects' (screening) or 'no adverse effects on integrity' (appropriate assessment), including 'in combination' assessment (which may be particularly relevant for some options – [✂]) The review of the options therefore provides a framework for the selection (and possible refinement) of the preferred options for the UUS SRO, identifies areas where further information may be required from UU, and allows UU to demonstrate a robust and iterative approach to the HRA.

6.1.2 The review of the UUS SRO options will be one factor in the preferred options selection process, and it is very possible that UU will wish to pursue options that are currently flagged as 'uncertain'. In these instances, it will be necessary to determine the information requirements that would allow a robust conclusion of 'no significant effects' or 'no adverse effects' to be drawn, and hence allow the WRMP to pass the Regulation 63 tests. This needs to be undertaken in conjunction with UU and its engineers, and may require additional supporting evidence or data from other organisations (e.g. NE; the EA; and NRW), particularly where the uncertainty relates to operational effects and the availability of new water.

6.1.3 In this context, (at the time of writing) UU is preparing an Environmental Monitoring Plan for submission at Gate 1. Taking into account regulator feedback, the Plan will detail the investigations to be completed prior to Gate 2 (and beyond) in response to the issues/uncertainties identified in the HRA review and to inform the selection of the preferred solution for the UUS SRO. The Environmental Monitoring Plan will be a 'live' document that is developed over time and its implementation will be reviewed in liaison with the NAU and NRW.

6.1.4 In accordance with the ACGW guidance, further HRA assessment will be undertaken prior to Gate 2 and will:

- reflect the HRA methodologies developed for the WRW Regional Plan and WRMP24;





- take account of the further investigations to be undertaken prior to Gate 2, as detailed in the Environmental Monitoring Plan;
- draw upon ongoing engagement with regulators; and
- reflect the most recent available information from UU on the options for the UUS SRO.





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Appendix B

Established / Assumed Avoidance and Mitigation Measures

Overview

The 'avoidance measures' that may be applied to the UUS SRO options are detailed below, and are grouped



as follows:

- General Measures (established construction best-practice, etc.) which will be applied to all options;
- Option-specific Measures (established and reliable measures identified to avoid specific potential effects on European sites, such as in relation to mobile species from those sites).

These measures will be applied unless project-level HRAs or scheme-specific environmental studies demonstrate that they are not required (i.e. the anticipated effect will not occur), not appropriate, or that alternative or additional measures are necessary or more appropriate.

Note that these measures are not exhaustive or exclusive and must be reviewed at the project stage, taking into account any changes in best-practice as well as scheme-specific survey information or studies.

General Measures and Principles

Scheme Design and Planning

All options will be subject to project-level environmental assessment as they are brought forward post-Gate 1, which will include assessments of their potential to affect European sites during their construction or operation. These assessments will consider or identify (inter alia):

- opportunities for avoiding potential effects on European sites through design (e.g. alternative pipeline routes; micro siting; etc);
- construction measures that need to be incorporated into scheme design and/or planning to avoid or mitigate potential effects - for example, ensuring that sufficient working area is available for pollution prevention measures to be installed, such as sediment traps;
- operational regimes required to ensure no adverse effects occur (e.g. compensation releases - although note that these measures can only be identified through detailed investigation schemes).

Pollution Prevention

The habitats of European sites are most likely to be affected indirectly, through construction-site derived pollutants, rather than through direct encroachment. There is a substantial body of general construction good-practice which is likely to be applicable to all of the proposed options and can be relied on (at this level) to prevent significant or adverse effects on a European site occurring as a result of construction site-derived pollutants. The following guidance documents detail the current industry best-practices in construction that are likely to be relevant to the proposed schemes:





- Environment Agency Pollution Prevention Guidance Notes³², including:
 - ▶ PPG1: General guide to the prevention of pollution (May 2001);
 - ▶ PPG5: Works and maintenance in or near water (October 2007);
 - ▶ PPG6: Pollution prevention guidance for working at construction and demolition sites (April 2010);
 - ▶ PPG21: Pollution incident response planning (March 2009);
 - ▶ PPG22: Dealing with spillages on highways (June 2002);
- Environment Agency (2001) Preventing pollution from major pipelines [online]. Available at www.environment-agency.gov.uk/static/documents/Business/pipes.pdf. [Accessed 1 March 2011];
- Venables R. et al. (2000) Environmental Handbook for Building and Civil Engineering Projects. 2nd Edition. Construction Industry Research and Information Association (CIRIA), London.

The best-practice procedures and measures detailed in these documents will be followed for all construction works as a minimum standard, unless scheme-specific investigations identify additional measures and/or more appropriate non-standard approaches for dealing with potential site-derived pollutants.

General measures for species

Most species-specific avoidance or mitigation measures can only be determined at the scheme level, following scheme-specific surveys that will take place post-Gate 2, and 'best-practice' mitigation for a species will vary according to a range of factors that cannot be determined at the strategic (WRMP/Regional Plan/Gate 1) level. In addition, some general 'best-practice' measures may not be relevant or appropriate to the interest features of the European sites concerned (for example, clearing vegetation over winter is usually advocated to avoid impacts on nesting birds; however, this is unlikely to be necessary to avoid effects on some SPA species (such as overwintering estuarine birds) and the winter removal of vegetation might actually have a negative effect on these species through disturbance). However, the following general measures will be followed to minimise the potential for impacts on species that are European site interest features unless project level environmental studies or HRA indicate that they are not required or not appropriate, or that alternative or additional measures are more appropriate/necessary:

- Scheme design will aim to minimise the environmental effects by 'designing to avoid' potential habitat features that may be used by species that are European site interest features when outside the site boundary (e.g. linear features such as hedges or stream corridors; large areas of scrub or woodland; mature trees; etc.) through scheme-specific routing studies;
- The works programme and requirements for each option will be determined at the earliest opportunity to allow investigation schemes, surveys and mitigation to be appropriately scheduled and to provide sufficient time for consultations with NE or NRW;
- Night-time working, or working around dusk/dawn, should be avoided to reduce the likelihood of negative effects on nocturnal species;
- Any lighting required (either temporary or permanent) will be designed with an ecologist to ensure that potential 'displacement' effects on nocturnal animals, particularly SAC bat species, are avoided;

³² Note, the Environment Agency Pollution Prevention Guidance Notes have been withdrawn by the Government, although the principles within them are sound and form a reasonable basis for pollution prevention measures.





- All compounds/pipe stores etc. will be sited, fenced or otherwise arranged to prevent vulnerable SAC species (notably otters) from accessing them;
- All materials will be stored away from commuting routes/foraging areas that may be used by species that are European site interest features;
- All excavations will have ramps or battered ends to prevent species becoming trapped;
- Pipe-caps must be installed overnight to prevent species entering and becoming trapped in any laid pipe-work.

Option-Specific Measures

Option specific measures (if required) will be determined as the preferred options are identified. However, it is assumed that the lowest-impact solution will be pursued, particularly regards construction solutions – for example, directional drilling beneath sensitive rivers rather than open cut; etc.