Grand Union Canal Transfer

GUC SRO Gate 3 Annex B3.16 Habitats Regulations Assessment

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AECOM

Grand Union Canal Transfer

Grand Union Canal SRO

Environmental Assessment (Gate 3)
Habitats Regulations Assessment - GUC

Affinity Water

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1. Introduction

1.1 Context

1.1.1 This report details the conclusions of a Habitats Regulations Assessment (HRA) to assess the potential impact of the GUC Strategic Resource Option (SRO) on Habitat sites (previously/also known as European sites), as part of the environmental assessment of the Grand Union Canal (GUC) SRO scheme at RAPID[1] Gate 3. The Services to be delivered are for Affinity Water (AfW) and Severn Trent (ST), collectively referred to as the Programme Management Board (PMB). Further detail of the SRO schemes is provided below.

1.1.2 The purpose of the environmental assessments is to assess the GUC Transfer SRO as a potential supply-side option within the RAPID Gated process. This report assesses specifically the impact on Habitats sites (Special Areas of Conservation, candidate Special Areas of Conservation, Special Protection Areas, potential Special Protection Areas, compensation sites and Ramsar sites) in relation to the GUC SRO. The habitats sites of England and Wales (including inshore sites to 12 nautical miles) is designated as the "national sites network" [2].It should be noted that there are no relevant candidate Special Areas of Conservation, compensation sites, or potential Special Protection Areas, so these are not discussed further. A separate HRA[3] has been produced for the associated Minworth SRO which is further described in Chapter 1.2.

1.1.3 This report builds on the assessments completed in the HRA undertaken at RAPID Gate 2. It does not revisit potential impacts which have already been dismissed (unless there are scheme changes which potentially alter outcomes). RAPID Gate 3 guidelines[4] state that:

"*Where an HRA may indicate that a solution could have an adverse effect on a European Site or a European Offshore Marine Site (either alone or in combination with other plans or projects), an outline strategy should be provided for ensuring that there will be no such effect or demonstrating that there are no alternatives, and that the solution must be carried out for imperative reasons of overriding public interest. Where mitigation or other measures need to be taken in connection with the effects on a European Site or a European Offshore Marine Site, the outline strategy should set out how these measures are to be implemented and an indicative timetable for implementation. The outline strategy and indicative timetable should be sufficiently developed for RAPID to assess its likely deliverability.*"

1.1.4 This HRA therefore undertakes a screening of Likely Significant Effects (LSEs) to allow for the assessment of likely deliverability. It builds upon and refines the work undertaken at Gate 2. At Gate 2 an Appropriate Assessment was included but the design has evolved since Gate 2 and the elements which led to that appropriate assessment are no longer part of the SRO.

1.2 Background

1.2.1 Minworth SRO includes a new Advanced Wastewater Treatment Plant (AWTP) that will treat recycled water from Minworth Wastewater Recycling Centre (WwRC). This flow will then be transferred to the existing canal waterways in the northern section of the GUC route (Coventry Canal → Oxford Canal → GUC). Upgrades to existing canal assets are required to facilitate additional flows and to ensure sufficient freeboard to the canal is maintained. Minworth SRO will be the source of recycled water to support the new abstraction for the GUC SRO. The Minworth SRO was reported separately to GUC in its own Gate 2 submission.

[1] Regulators' Alliance for Progressing Infrastructure Development (RAPID) https://www.ofwat.gov.uk/regulated-companies/rapid/
[2] Policy paper (2021) Changes to the Habitats Regulations 2017 Available At: https://www.gov.uk/government/publications/changes-to-the-habitats-regulations-2017/changes-to-the-habitats-regulations-2017#:~:text=SACs%20and%20Special%20Protection%20Areas%20(SPAs)
[3] Minworth Gate 3 Annex B3.7 Habitat Regulations Assessment - Minworth
[4] Regulators' Alliance for Progressing Infrastructure Development (2024) Strategic regional water resource solutions guidance for gate three Version 3

1.2.2 In the southern section of the GUC, water will be abstracted from the canal and treated prior to distribution to AfW customers (refer to Figure 1-1 for Scheme Layout) via an underground reservoir near Luton.

1.2.3 The Regulators' Alliance for Progressing Infrastructure Development (RAPID) gated process has allowed these SRO schemes to develop at pace, making significant progress since investigations began in April 2020. Through Gate 2, it was demonstrated that the GUC SRO offers drought resilience to AfW customers and to the GUC by utilising enhanced recycled water.

1.2.4 A key element of the GUC and Minworth SROs is to investigate the environmental risks and opportunities associated with delivery of the schemes. Previous environmental assessments at Gate 1 and Gate 2 have considered Water Framework Directive (WFD) related impacts and benefits, baseline ecological data, and in particular the potential impacts of changes in flow to ecological receptors such as designated sites and their qualifying features, protected and notable species, and constraints from the presence or future spread of Invasive Non-Native Species (INNS). Gate 2 environmental assessments also informed Biodiversity Net Gain (BNG) and Natural Capital assessments, Habitats Regulations Assessment (HRA) screening, and WFD assessment to support the Environmental Assessment Reports for Gate 2 submission. Environmental assessments at Gate 1 and Gate 2 have been informed by regular engagement with Regulators and stakeholders to provide direction and buy-in for the on-going assessments. Discussions in relation to the BNG and classification of baseline habitats are ongoing.

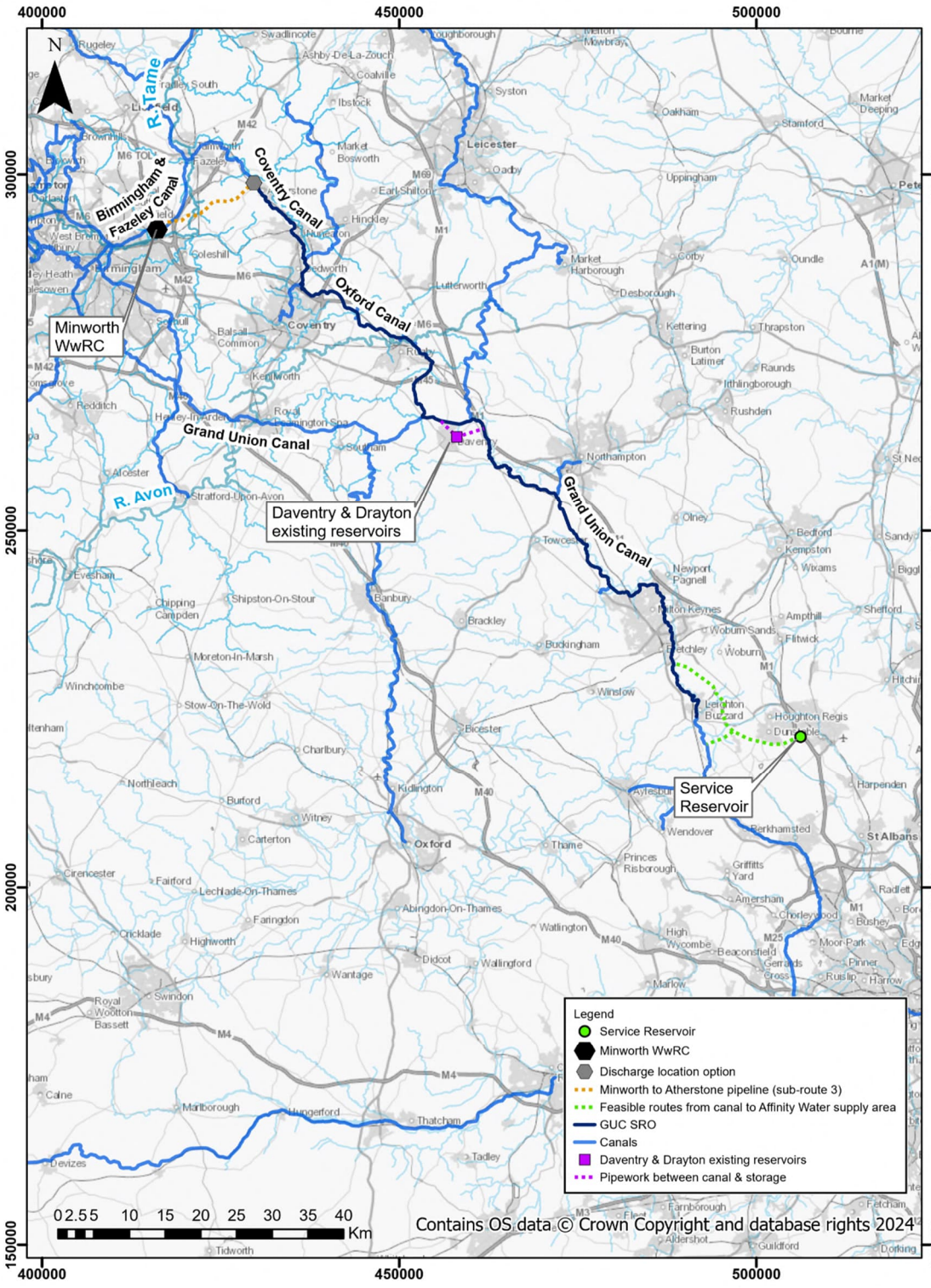

Figure 1-1 Scheme layout (provided by AfW August 2024)

GUC SRO

1.2.5 The draft WRSE (Water Resources South-East) Regional Plan selects the GUC to meet the deployable output requirements of the region by 2032. The scheme has been sized and costed for the transfer of up to a total of 115 Ml/d.

1.2.6 There will be an expected transfer of 230 Ml/d from the Minworth SRO of which 115Ml/d will be to the GUC. The GUC SRO will be designed to accept a maximum of 115 Ml/d from Minworth SRO as per the WRMP24, PR24 and regional water resource planning regulatory submissions. The utilisation of the scheme will vary over the course of a given year, with expected 80-100% utilisation in the summer months and a lower tick-over flow around 25% of capacity throughout the winter. The 115 Ml/d capacity generates a 100 Ml/d Deployable Output (DO).

1.2.7 GUC is a 'transfer option' and will receive recycled water from Minworth WwRC AWTP to transfer via the canal network (Coventry Canal, Oxford Canal, GUC) to an abstraction location near Bletchley. A new pipeline and existing canal infrastructure will be utilised to convey recycled water from Minworth SRO in Severn Trent's supply area to Affinity Water's supply area. This will allow Affinity Water to progress with abstraction reductions as per their Environmental Destination. Water will be abstracted from the GUC and treated prior to distribution to customers.

1.2.8 Transferred water will progress along the Coventry Canal by gravity, and into the Oxford Canal at Hawkesbury Lock. Flows will need to bypass Hawkesbury Lock via a low-lift pumping station. The Oxford Canal will then convey the water to the GUC and on to a pumping station at Braunston Junction. The majority of the flow along the Oxford Canal will be by gravity; however, a pumping station will be required to bypass the locks at Hillmorton.

1.2.9 A further lock bypass pumping station may be required south of Milton Keynes at Fenny Stratford. The GUC section also requires eight gravity bypasses to "downflow" locks at the Wilton Marine Lock Flight, Stoke Bruerne Lock Flight and Cosgrove Lock.

1.2.10 Bank and towpath raising will be required to accommodate the increase in water levels along the canal and will range from 100 mm up to 250 mm. For a transfer of 115 Ml/d approximately 54 km would require raising out of a total canal length of approximately 120 km from Atherstone to Bletchley. Modifications to 57 existing waste weirs will maintain water loss to adjacent watercourses at current levels. Piped bypass arrangements or canal widening will be needed at four hydraulic constraint points to avoid exceeding velocity limitations for canal operation, set at 0.3 m/s to ensure that boat navigation is not hindered. Similarly, five existing bridges will need to be modified (to maintain head clearance) for the 115 Ml/d scheme.

1.2.11 Options for abstracting water from the canal were shortlisted. The preferred site for abstraction and treatment is at Bletchley, with a transfer route to the AfW supply network via an existing underground reservoir near Luton. Criteria for selection included site constraints, energy efficiency, environmental risk, carbon emissions, cost, and social and environmental benefits.

Daventry and Drayton Reservoirs

1.2.12 Drayton Reservoir and Daventry Reservoir currently operate as header reservoirs for the GUC, the purpose for which they were constructed and are operated by the Canal and River Trust. The reservoirs are proposed as a 'Storage Option' to support the GUC transfer, whereby the reservoirs can be drawn down to augment the transfer in the GUC during periods of high demand, or as dictated by hands-off flows in the River Tame and River Trent catchments. During such eventuality, continued transfer from Minworth to the River Tame may be required to support flows in the River Trent (For the assessment of potential effects to Habitats Sites associated with the Rivers Tame and Trent, refer to Minworth Gate 3 Annex B3.7 HRA Report), and therefore the GUC transfer in the canals will be augmented by transfer from the reservoirs. It is proposed that a semi-continuous transfer of 28 Ml/d from the GUC to the reservoirs will be maintained to ensure they are full to provide draw-down support as and when required.

1.2.13 The current proposal consists of transfer from Braunston Top Lock on the GUC into the upstream end of both reservoirs, providing options to control the storage and supply of water and reduce drawdown of water over extended periods of time, as shown in Figure 1-2. Water would then be drawn-down from the reservoirs to the GUC via existing connections to the GUC to the northeast of the reservoirs. It is

currently assumed that fluctuations in reservoir levels will remain within current ranges, with maximum water levels controlled by reservoir restrictions, and a current draw-down limit of 30% capacity on Drayton Reservoir due to angling and recreational activities.

1.2.14 Drayton Reservoir is a managed fishing reservoir, and Daventry Reservoir lies within Daventry Country Park Local Nature Reserve (LNR).

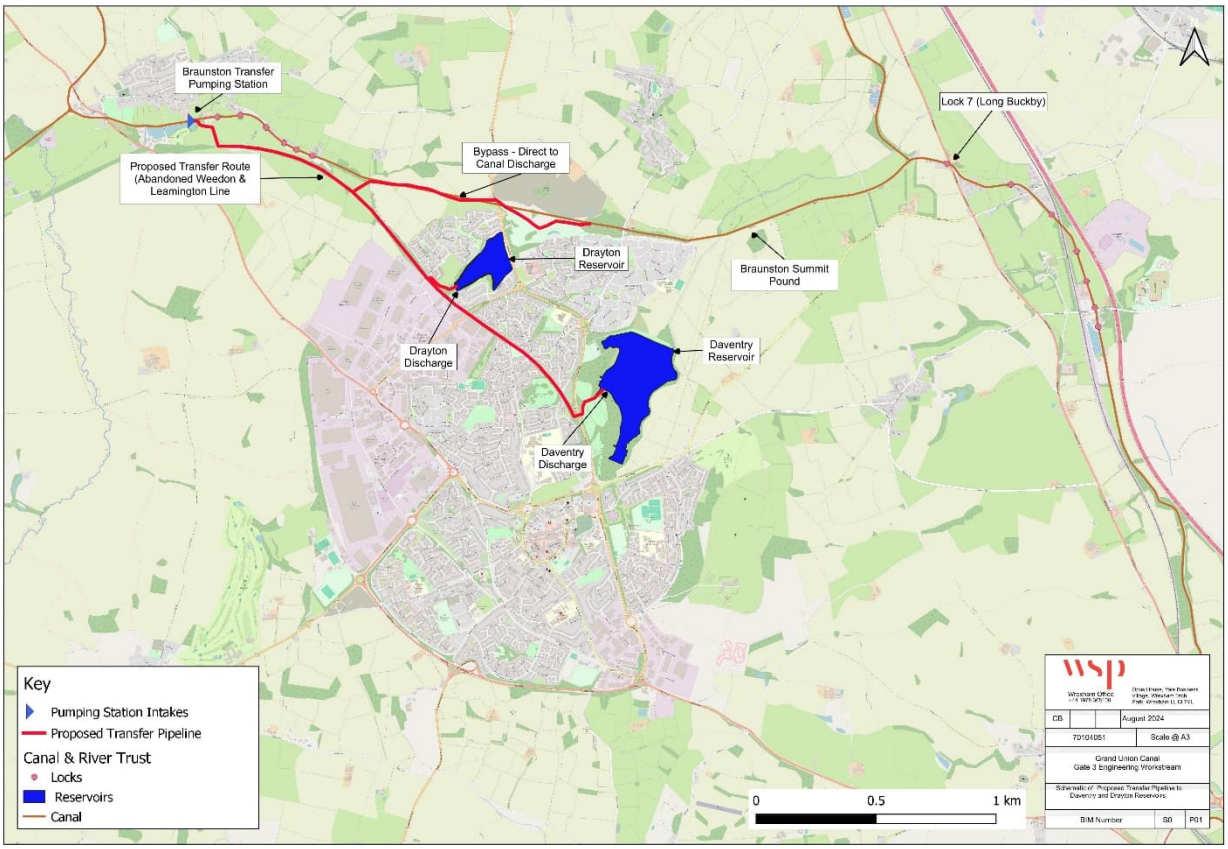

Figure 1-2. Schematic of currently proposed transfer pipeline to Daventry and Drayton Reservoirs

1.3 Environmental Assessment

1.3.1 Through defining the scope of Gate 3 environmental assessments to date we have considered the environmental assessments completed for the SRO schemes at Gate 1 and Gate 2, the outcomes of these assessments, comments from regulators and assurance processes, and any recommendations for further work. This understanding of the background to the Minworth and GUC SROs forms the basis of the Gate 3 monitoring and assessment programme.

1.3.2 This report assesses specifically the impact on Habitats sites in relation to the GUC SRO.

1.3.3 The objective of the report is to determine whether any aspect of the GUC SRO and associated works will have a Likely Significant Effect (LSE) on any Habitats Sites and, if an LSE is indicated, an Appropriate Assessment of any negative impact on any Habitats sites.

Rationale for Gate 3 Assessment

1.3.4 This component of the Gate 3 environmental assessment is justified following consideration of the potential impacts of the proposed scheme, which are summarised in Table 1-1 below.

Table 1-1 Potential impacts of the GUC SRO on Habitats sites

Potential impact	Impact pathway	Rationale for assessment
Increased water levels in the GUC	There is hydrological connectivity between the GUC and the River Nene at Whitton Flood Paddle and Stow Flood Paddle.	Potential to impact water quality and quantity.
Construction impact (increase to bank levels of canal, introduction of pumping stations etc)	Atmospheric pollution (Nitrogen deposition)	Increase in traffic during construction phase (materials and workers) has the potential to impact nitrogen deposition.

Stakeholder Engagement

1.3.5 The scope of assessment is also informed by on-going regulator and stakeholder engagement, both through Gate 1 and Gate 2, and through developing the scope for Gate 3 assessment. Regulator and stakeholder comments relevant to this assessment are summarised in Table 1-2 below, with responses in relation to the rationale for assessment. Comments represented in Table 1-2 are dated April 2022 and were received on 04 May 2022.

Table 1-2 Regulator and stakeholder comments and rationale for assessment scope

Regulator / Stakeholder	Source	Comment	Gate 2 Response and rationale for assessment	Gate 3 action
Natural England	GUC EA Combined Comments Log Gate 2	As part of the HRA guidance a scoping assessment is needed to assess which protected sites could be significantly adversely affected to investigate further in the appropriate assessment. Referencing the screening conducted for WRSE will not cover an updated version of the plan which potentially may change the outcome of the screening. The screening must be undertaken by the competent authority.	The WRSE screening has been reviewed in the document in light of the GUC option changes which concluded that no changes to the screening assessment were required.	No further action at Gate 3
Natural England	GUC EA Combined Comments Log Gate 2	It is not appropriate to be including mitigation in the screening stage. This report section should be moved to the appropriate assessment	The mitigation measures are included in Chapter 5 Appropriate Assessment. These have not been referred to at screening.	Mitigation in the form of legal requirements due to other legislation (i.e. regarding pollution) is included at the screening stage for the HRA of the scheme. No specific mitigation is identified as being required for any European sites. For Gate 3 the scheme has changed, and no appropriate assessment is now deemed necessary.
Natural England	GUC EA Combined Comments Log Gate 2	Natural England is supportive of using directional drilling to minimise impact. Impact could be further minimised by prioritising the utilisation of existing infrastructure at river crossings and planning a route that minimises the total number of river crossings.	Noted - no change required	No further action at Gate 3
Natural England	GUC EA Combined Comments Log Gate 2	In reference to point 1 the WRSE screening does not match the updated project such as the movement of the extraction location to Leighton Buzzard	The screening assessment has been amended to reflect this. The screening result is a review of the WRSE and considers the abstraction location at Leighton Buzzard.	This assessment is based on an abstraction location at Bletchley and impact pathways assessments reflect this.
Natural England	GUC EA Combined Comments Log Gate 2	The effects of disturbance on the protected bird species of Upper Nene Valley Ramsar and SPA needs to be covered. While there is currently no specific work planned for that area this could change, so it would be beneficial	This process is an iterative one and the HRA will be further reviewed at Gate 3 in accordance with RAPID guidance. Therefore, any changes to the design that	No further requirements identified at Gate 3; due to distance of the SPA from the proposed works, no connectivity is present which could lead to disturbance of the SPA features.

Regulator / Stakeholder	Source	Comment	Gate 2 Response and rationale for assessment	Gate 3 action
		to plan potential mitigation as the project progresses. This will allow mitigation to be integrated into the plan more easily, making the plan more resilient to potential adverse effects.	could result in disturbance to the features of the SPA and Ramsar will be assessed in further stages.	
Natural England	GUC EA Combined Comments Log Gate 2	Upper Nene Valley SPA and Ramsar are two separate designated sites and should be assessed in the appropriate assessment separately	Agreed, however given the high level of the HRA at this stage the effects are similar to the two designated sites. An assessment of both would be the same and will result in unnecessary repetition in the report. In the next stage the two designated sites will be treated separately in light of more detailed design information.	The features of both the SPA and Ramsar are identified separately, however potential impact pathways for both are the same and have been treated as such to reduce duplication.
Natural England	GUC EA Combined Comments Log Gate 2	Natural England is pleased that minimising overspill on protected sites has been investigated. Natural England would like this to be expanded to investigating the mitigation potential of overspills on supporting feeding and roosting habitat and to what extent the sluice lockage and bypass flow system minimises overspill.	As per comment 11 above, the HRA will be reviewed at Gate 3 in accordance with RAPID guidance. At this stage there is no evidence that the feeding and roosting habitat will be affected.	The proposals have been reviewed at Gate 3 but the Gate 2 conclusion that there is no connection between GUC and impacts on feeding and roosting habitat for SPA/Ramsar birds, is maintained. There is thus no requirement for mitigation.
Natural England	GUC EA Combined Comments Log Gate 2	Please provide evidence of why the introduction of INNS along the canal and river channels are unlikely to colonise Upper Nene Valley Gravel Pits SPA and Ramsar	INNS Risk Assessment was undertaken at Gate 2 and has been updated for Gate 3. GUC design and hydraulic modelling indicates that connections to watercourses (including the River Nene) will remain unaffected by the Scheme, and therefore INNS risk will remain the same.	No further action at Gate 3. The assessment assumes that measures required to comply with other legislation (such as regarding non-native invasive species) will be implemented irrespective of the presence of international designations. Refer to Gate 3 GUC INNS Risk Assessment report.
Natural England	GUC EA Combined Comments Log Gate 2	The in-combination assessment should be conducted in a similar method to the SEA where possible. It is important to include a list of projects that have been compared against the GUC SRO to show evidence that major projects have been included in the assessment	The list of projects has been included as for the SEA but as we have not identified LSE to the designated sites, an in-combination assessment is not required.	No further action at Gate 3. No impact pathways have been identified to internationally important wildlife sites.

Regulator / Stakeholder	Source	Comment	Gate 2 Response and rationale for assessment	Gate 3 action
Natural England	GUC EA Combined Comments Log Gate 2	The 'significant' out of 'no significant adverse effects' should be taken out as this is the wrong terminology for the stage 2 appropriate assessment.	Amended	No further action at Gate 3. For Gate 3 the HRA process has been entirely revisited and it is considered a conclusion of no likely significant effect can be drawn.
Natural England	GUC EA Combined Comments Log Gate 2	Ensor's pool SAC has been ruled out as no likely significant impact due to lack of hydrological connectivity between the canal and the site. However, the Canal is within the SSSI impact zone for water supply and the geological elements are complex. Refer to be bedrock geology and linear features. The Griff Arm Feeder is close by. Can mitigation measures consider removal of the Griff Arm Feeder into the canal? I am guided by our groundwater and hydrology experts.	The option is not expected to affect groundwater bodies so there is no pathway through this route to affect this designated site.	No further action at Gate 3

2. Scope and Approach

2.1 Projects and Work Completed to Date

2.1.1 The following assessment was completed at Gate 2, and this has informed the scope of continuing assessment at Gate 3:

- GUC Gate 2 Annex B3.3.3 Habitats Regulation Assessment

2.2 Legislation

2.2.1 The UK left the European Union (EU) on 31 January 2020 under the terms set out in the European Union (Withdrawal Agreement) Act 2020 ("the Withdrawal Act"). While the UK is no longer a member of the EU, a requirement for Habitats Regulations Assessment will continue as set out in the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019[5].

2.2.2 The HRA process applies the 'Precautionary Principle'[6] to Habitats sites. Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the European site(s) in question. To ascertain whether or not site integrity will be affected, an Appropriate Assessment should be undertaken of the Plan or project in question. Figure 2-1 below sets out the legislative basis for Appropriate Assessment.

2.2.3 Plans and projects that are associated with potential adverse impacts on Habitats sites may still be permitted if there are no reasonable alternatives and there are Imperative Reasons of Overriding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation would be necessary to ensure the overall integrity of the site network.

Conservation of Habitats and Species Regulations 2017 (as amended)

The Regulations state that:

"*A competent authority, before deciding to … give any consent, permission or other authorisation for, a plan or project which – (a) is likely to have a significant effect on a European site … (either alone or in combination with other plans or project)… must make an appropriate assessment of the implications of the plan or project in view of the site's conservation objectives… The competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site*".

Figure 2-1. The legislative basis for Appropriate Assessment

2.2.4 Over time the phrase 'Habitats Regulations Assessment' (HRA) has come into wide currency to describe the overall process set out in the Regulations from screening through to IROPI. This has arisen in order to distinguish the process from the individual stage described in the law as an 'Appropriate Assessment'.

2.2.5 In spring 2018 the 'Sweetman' European Court of Justice ruling[7] clarified that 'mitigation' (i.e., measures that are specifically introduced to avoid or reduce a harmful effect on a Habitats site that would otherwise arise) should not be taken into account when forming a view on Likely Significant Effects. Mitigation should instead only be considered at the Appropriate Assessment stage. This HRA is cognisant of that ruling.

[5] These don't replace the 2017 Regulations but are just another set of amendments.
[6] The Precautionary Principle, which is referenced in Article 191 of the Treaty on the Functioning of the European Union, has been defined by the United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2005) as: *"When human activities may lead to morally unacceptable harm* [to the environment] *that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm. The judgement of plausibility should be grounded in scientific analysis".*
[7] People Over Wind and Sweetman v Coillte Teoranta (C-323/17)

2.3 Habitats site scope of the project

2.3.1 There is no pre-defined guidance that dictates the physical scope of an HRA of a Plan document. Current guidance suggests that the following Habitats Sites should be included into the scope of an HRA assessment:

- All Habitats Sites within the boundary of the SRO scheme; and,
- Habitats Sites located outside of the SRO scheme boundary shown to be linked to the development in the SRO through a known 'pathway' (discussed below).

2.3.2 Based on previous experience with HRA, most impact sources on Habitats Sites arise from within (often well within) 10km of that site. Development impacts can extend beyond 10km where hydrological pathways and surface water catchments are involved, which is why the source-pathway-receptor concept is used to help determine whether there are potential pathways connecting development to Habitats Sites. Briefly defined, impact pathways are routes by which the implementation of a policy within scheme can lead to an effect upon a Habitats Site. This takes site-specific sensitivities into account, including issues such as nutrient neutrality or water levels, quantity, and flow.

2.3.3 The following Habitats Sites judged to have possible impact pathways present are discussed in this HRA:

- Upper Nene Valley Gravel Pits SPA/Ramsar site (8.3 km east of GUC)
- Chilterns Beechwoods SAC (slightly over 10 km south of the GUC), and
- Ensor's Pool SAC (1.1km west of GUC)

2.3.4 Habitats Sites within 10 km of the GUC SRO scheme are shown in Appendix A: Figure 3. Under normal circumstances there is no connection between the GUC and the River Mease SAC; It is understood that the Coventry Canal connects to the Ashby Canal and the latter crosses the River Mease and has breached in the past. However, the connection of the River Mease to the Ashby Canal is approximately 32 km distant from the Coventry Canal. Moreover, the HRA considers impacts that are likely to arise from the normal function, connection and operation of watercourses, rather than incidental connections that may arise during failures of another watercourse or flood defence system. Under normal circumstances there is no connection between the Coventry Canal and the River Mease, and therefore impacts are considered unlikely – however, this will be revisited at Gate 4 when updated modelling results for the GUC scheme are available.

2.3.5 An introduction to the qualifying features (species and habitats), Conservation Objectives, and threats and pressures to the integrity of these Habitats Sites are set out in Section 3.

2.3.6 In order to fully inform the screening for LSEs stage, several studies and online information databases have been consulted. These include:

- Road traffic statistics from the Department for Transport (https://roadtraffic.dft.gov.uk);
- Surface water catchment GIS Shapefiles for the relevant hydrological catchments;
- Site Improvement Plans and Supplementary Conservation Advice Notes for relevant Habitats Sites published by Natural England;
- The UK Air Pollution Information System (www.apis.ac.uk); and
- Multi Agency Geographic Information for the Countryside (MAGIC) and its links to SSSI citations and the JNCC website (www.magic.gov.uk).

2.3.7 How each data source has been used is discussed in the relevant section on the Habitats site. For example, for Upper Nene Valley Gravel Pits SPA/Ramsar site, hydrological connections were traced between the GUC and the River Nene and thus the SPA/Ramsar. For Ensor's Pool data on surface water connectivity were used (confirming the site is groundwater fed based on Environment Agency advice), while for Chilterns Beechwoods the absence of connectivity to the GUC was established.

2.4 Quality Assurance

2.4.1 This report was undertaken in line with AECOM's Integrated Management System (IMS). Our IMS places great emphasis on professionalism, technical excellence, quality, environmental and Health and Safety management. All staff members are committed to establishing and maintaining our certification to the international standards BS EN ISO 9001:2008 and 14001:2004 and BS OHSAS 18001:2007. In addition, our IMS requires careful selection and monitoring of the performance of all sub-consultants and contractors.

2.4.2 All AECOM Ecologists working on this project are members (at the appropriate level) of the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow their code of professional conduct (CIEEM, 2019).

2.5 Methodology

Introduction

2.5.1 The HRA has been carried out with reference to the general EC guidance on HRA[8] and general guidance on HRA published by government in July 2019 and February 2021[9]. AECOM has also been mindful of the implications of European case law in 2018, notably the Holohan ruling and the People over Wind ruling, both discussed below.

2.5.2 Figure 2-2 below outlines the stages of HRA according to current EC guidance. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations and any relevant changes to the Plan.

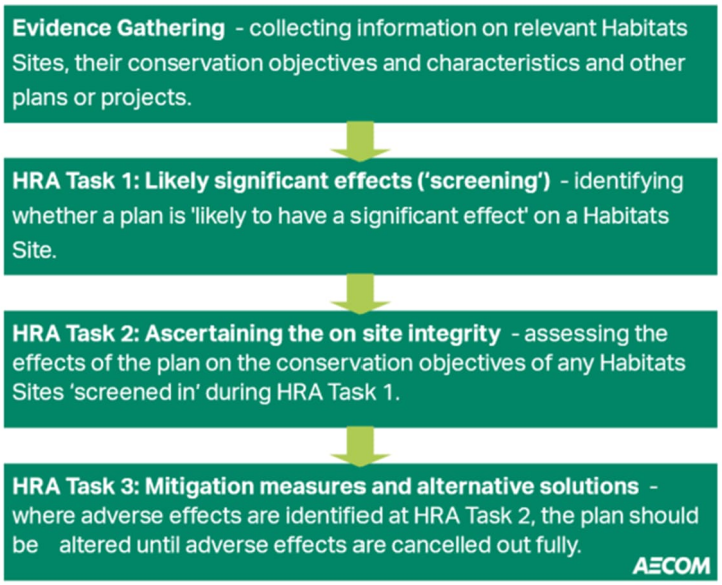

Figure 2-2. Four Stage Approach to Habitats Regulations Assessment. Source EC. 2001[1].

Description of HRA Tasks

HRA Task 1 – Screening for Likely Significant Effects (LSEs)

2.5.3 Following evidence gathering, the first stage of any Habitats Regulations Assessment is the screening for Likely Significant Effects (LSEs), essentially a high-level assessment to decide whether the full subsequent stage known as Appropriate Assessment is required. The essential question is:

[8] European Commission (2021): Assessment of plans and projects significantly affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and 6(4) of the Habitats Directive.
[9] https://www.gov.uk/guidance/appropriate-assessment https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site

"Is the project, either alone or in combination with other relevant projects and plans, likely to result in a significant effect upon Habitats sites?"

2.5.4 The objective is to filter out those Plans and projects that can, without any detailed appraisal, be concluded to be unlikely to result in any impacts upon Habitats Sites, usually because there is no mechanism for a negative interaction. This stage is undertaken in Section 1 of this report.

HRA Task 2 – Appropriate Assessment (AA)

2.5.5 Where a conclusion of 'no Likely Significant Effects (LSEs)' cannot be drawn, the analysis proceeds to the next stage of HRA known as Appropriate Assessment. Case law has clarified that 'Appropriate Assessment' is not a technical term. In other words, there are no particular technical analyses, or level of technical analysis, that are classified by law as belonging to Appropriate Assessment compared to the screening stage.

2.5.6 By virtue of the fact that it follows screening for LSEs, there is a clear implication that the analysis will be more detailed than undertaken at the previous stage. One of the key considerations during Appropriate Assessment is whether there is available mitigation that would entirely address the potential effect. In practice, the Appropriate Assessment would take any aspects of the development scheme that could not be dismissed following the high-level screening and assess the potential for an effect in more detail, with a view to concluding whether there would be a potential for an adverse effect on site integrity (in other words, disruption of the coherent structure and function of the Habitats Site(s)). A decision by the European Court of Justice[10] concluded that measures intended to avoid or reduce the harmful effects of a proposed Plan or project on a Habitats Site may no longer be considered by competent authorities at the screening for LSEs stage of HRA. That ruling has been taken into account in producing this HRA.

2.5.7 Also, in 2018 the Holohan ruling[11] was handed down by the European Court of Justice. Among other provisions paragraph 39 of the ruling states that '*As regards other habitat types or species, which are present on the site, but for which that site has not been listed, and with respect to habitat types and species located outside that site, … typical habitats or species must be included in the appropriate assessment, if they are necessary to the conservation of the habitat types and species listed for the protected area*' [emphasis added].

HRA Task 3 – Avoidance and Mitigation

2.5.8 Where necessary, measures are recommended for incorporation into the scheme in order to mitigate and / or avoid adverse effects on Habitats Sites.

Confirming Other Plans and Projects That May Act In-Combination

2.5.9 It is a requirement of the Regulations that the effects of any land use plan being assessed are not considered in isolation but in-combination with other plans and projects that may also be affecting the Habitats site(s) in question.

2.5.10 When undertaking this part of the assessment it is essential to bear in mind the principal intention behind the legislation, i.e. to ensure that those projects or plans (which in themselves may have minor effects) are not simply dismissed on that basis but are evaluated for any cumulative contribution they may make to an overall significant effect. In practice, in-combination assessment is therefore of greatest relevance when proposed Planning policies would otherwise be screened out because their individual contribution is inconsequential.

2.5.11 When considering other plans or projects to include for 'in combination' assessment, those currently unconsented projects (or consented but not yet implemented) were examined for inclusion, since projects that are already operational (e.g. existing abstractions) are part of the baseline. This involved a search of planning portals of local authorities, liaison with Severn Trent, and consultation with Natural England and the Environment Agency. Given the nature of the impacts of the GUC scheme (predominantly hydrological) and its location, the following plans and projects are considered to have the potential to act in-combination with the SRO:

[10] People Over Wind and Sweetman v Coillte Teoranta (C-323/17)
[11] Case C-461/17

- Minworth Strategic Resource Option (SRO); and
- Severn Trent Drainage and Wastewater Management Plan (Final 2023)[12]; specifically, the water transfers and changes to abstraction being delivered as part of AMP7 and the suite of works planned for AMP8.

2.5.12 It should be noted that, while their broad potential effects are considered, this assessment does not undertake full HRA of each of these planning documents. Instead, existing HRAs that have been carried out were drawn upon.

2.6 Limitations

2.6.1 This HRA is a desk-based assessment of a scheme that is still being designed. Therefore, not all design details are available (as is the nature of the gated process) and the scheme will continue to be developed post-Gate 3. Therefore, the scheme design is subject to change. However, given the absence of connectivity (or limited connectivity) between the Habitats sites discussed and the GUC scheme, this limitation is not considered to impact the conclusions of this report.

[12] Available at https://www.severntrent.com/about-us/our-plans/drainage-wastewater-management-plan/ [Accessed 24/04/24]

3. Habitats Sites

3.1.1 The locations of the Habitats Sites described below are shown in Location of Habitats Sites Appendix A Figure 3.

3.2 Upper Nene Valley Gravel Pits SPA / Ramsar

Introduction

3.2.1 Upper Nene Valley Gravel Pits SPA consists of a chain of exhausted sand and gravel pits extending for approximately 35km along the alluvial deposits of the River Nene in Northamptonshire. The pits form an extensive series of shallow and open waters which occur in association with a wide range of habitats including reed swamp, marsh, wet ditches, rough grassland and scattered woodland. The extensive open waters and associated habitats of the Upper Nene Valley Gravel Pits collectively form one of the most important inland localities in England for waterbirds in the non-breeding period and regularly supports peak numbers of waterbird in excess of 20,000 individuals, including significant populations of bittern, golden plover and gadwall.

Qualifying Features[13]

With regards to the SPA[14]:

ARTICLE 4.1 QUALIFICATION (79/409/EEC) Over winter the area regularly supports:

- Eurasian bittern *Botaurus stellaris* (Europe - breeding) 2% of the GB population 5-year peak mean 1999/2000 - 2003/04
- European golden plover *Pluvialis apricaria* [North-western Europe - breeding] 2.3% of the GB population 5-year peak mean 1999/2000 - 2003/04

ARTICLE 4.2 QUALIFICATION (79/409/EEC) Over winter the area regularly supports:

- Gadwall *Anas strepera* (North-western Europe) 2% of the population 5-year peak mean 1999/2000 - 2003/04

ARTICLE 4.2 QUALIFICATION (79/409/EEC): An internationally important assemblage of birds. Over winter the area regularly supports:

- 23821 waterfowl (5-year peak mean 1991/92-1995/96) Including: great crested grebe, great cormorant *Phalacrocorax carbo*, Eurasian bittern, Eurasian wigeon, gadwall, mallard *Anas platyrhynchos*, northern shoveler, common pochard *Aythya ferina*, tufted duck, Eurasian coot, European golden plover [North-western Europe - breeding], lapwing *Vanellus vanellus*.

With regards to the Ramsar[15]:

Ramsar Criterion 5

The site qualifies under Criterion 5 because it regularly supports 20,000 or more waterbirds:

- In the non-breeding season, the site regularly supports 23,821 individual waterbirds (5-year peak mean 1999/2000 – 2003/04).

Ramsar Criterion 6

The site qualifies under Criterion 6 because it regularly supports 1% of the individuals in the populations of the following species or subspecies of waterbird in any season:

[13] Available at: https://publications.naturalengland.org.uk/file/5096750222147584 [Accessed 19/06/2024]
[14] Available at: https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9020296.pdf [Accessed 19/06/24]
[15] Available at: https://rsis.ramsar.org/RISapp/files/RISrep/GB2023RIS.pdf [Accessed on 19/06/2024]

- Mute swan *Cygnus olor* – 629 individuals (wintering) representing 1.7% of British population (5-year peak mean 1999/00 – 2003/04)
- Gadwall *Anas strepera* – 773 individuals (wintering) representing 2.0% of the NW Europe (breeding) population (5 years peak mean 1999/00 – 2003/04)

Conservation Objectives[16] [17]

3.2.2 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features'), and subject to natural change;

3.2.3 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.

Threats / Pressures on Site Integrity[18]

3.2.4 Natural England's Site Improvement Plan lists the following threats / pressure on the site integrity of the Upper Nene Valley Gravel Pits SPA:

- Public access / disturbance,
- Planning permission: general,
- Fisheries: Freshwater,
- Change in land management.

3.3 Chilterns Beechwoods SAC

Introduction

3.3.1 The Chilterns Beechwoods Special Area of Conservation (SAC) is an extensive site covering nearly 1,300 hectares and is made up of several components within Dacorum, Buckinghamshire, South Oxfordshire, and Windsor and Maidenhead. It is protected for its beech forests, semi-natural dry grasslands and scrub, and its population of stag beetles.

Qualifying Features[19]

3.3.2 Annex I habitats that are a primary reason for selection of this site:

- H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*); Dry grasslands and scrublands on chalk or limestone
- H9130 *Asperulo-Fagetum* beech forests; Beech forests on neutral to rich soils

3.3.3 Annex II species present as a qualifying feature, but not a primary reason for site selection:

- S1083 Stag Beetle *Lucanus cervus*

[16] Available at: https://publications.naturalengland.org.uk/file/6711339502534656 [Accessed on 24/04/2024]
[17] Available at: https://designatedsites.naturalengland.org.uk/TerrestrialAdvicePDFs/UK0030080.pdf [Accessed on 24/04/2024]
[18] Available at: https://publications.naturalengland.org.uk/file/6679502935556096 [Accessed on the 24/04/2024]
[19] Available at: https://publications.naturalengland.org.uk/file/4855330563424256 [Accessed on 24/04/2024]

Conservation Objectives[20]

3.3.4 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features'), and subject to natural change;

3.3.5 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.

Threats / Pressures on Site Integrity[21]

3.3.6 Natural England's Site Improvement Plan lists the following threats / pressure on the site integrity of the Chilterns Beechwoods SAC:

- Forestry and woodland management,
- Deer,
- Change in species distributions,
- Invasive species,
- Disease,
- Public access / disturbance, and
- Air pollution: Impact of atmospheric nitrogen deposition.

3.3.7 No hydrological connection (or other pathway) has been identified. The justification for inclusion of the SAC at Gate 2 was due to the close proximity of the Tring intake, located approximately 0.6km from the Habitats Site. However, the currently preferred option includes an intake at Leighton Buzzard more than 10km away for this site. Therefore, effects are no longer anticipated from construction of the GUC Scheme, and this Habitat site is not discussed further in this document.

3.4 Ensor's Pool SAC

Introduction

3.4.1 Ensor's Pool was notified as an SAC in 2001 when it supported a large and healthy population of white-clawed crayfish, *Austropotamobius pallipes* (approximately 50,000 individuals), and it is the population of this species that is the interest feature of the site.

3.4.2 Ensor's Pool is located immediately south-west of Nuneaton between Heath End Road to the north and Harefield Lane to the south. It is an abandoned clay pit measuring 3.5 hectares in size with a perimeter of approximately 770 metres and an average depth of 8 metres. A dye tracing exercise of the pool by the Environment Agency has confirmed Ensor's Pool is groundwater fed and is not hydraulically linked to nearby ordinary watercourses.

3.4.3 The pool has some marginal vegetation of hard rush *Juncus inflexus*, common spike-rush *Eleocharis palustris*, water horsetail *Equisetum fluviatile* and lesser bulrush *Typha angustifolia*. Water plants

[20] Available at: https://publications.naturalengland.org.uk/file/4961243408629760 [Accessed on 24/04/2024]
[21] Available at: https://publications.naturalengland.org.uk/publication/6228755680854016 [Accessed on the 24/04/2024]

include spiked water-milfoil *Spicatum sp.* and broadleaved pondweed *Potamogeton natans*. The pool is surrounded by areas of scrub and grassland.

Qualifying Features

Annex II species:

- White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*.

Conservation Objectives

3.4.4 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

3.4.5 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 of qualifying species
- The structure and function 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.

3.4.6 For Ensor's Pool SAC the 'restore' element of the objective is crucial as a series of surveys have indicated that the white-clawed crayfish population of the site died out at least nine years ago. The surveyor's report, published by Natural England in October 2015 states that the 'once abundant population of white-clawed crayfish appears to have disappeared. The pool still appears to provide suitable habitat for crayfish and there is no indication that any other animal or plant species has been affected.' The report goes on to suggest that crayfish plague seems likely to be the cause of mortality. Further surveys in 2015 confirmed that the population of white-clawed crayfish is no longer present at Ensor's Pool. However, the fact that white-clawed crayfish are not currently present in the SAC does not mean that the site is no longer protected. Furthermore, there are indications from a 2024 study that the population may be recovering. Instead, conservation efforts are focussed on restoring the white-clawed crayfish population and projects must ensure they do not compromise those efforts.

Threats / Pressures to Site Integrity

3.4.7 The following threats/ pressures to the site integrity of Ensor's Pool SAC are listed in Natural England's Site Improvement Plan with further details provided within the Supplementary Advice on Conserving and Restoring Site Features :

- Changes in species distribution
- Recreational pressure (previously identified from consultation with Natural England), and
- Changes to ground water flows (previously identified from consultation with Natural England).

4. Screening for Likely Significant Effects (LSEs)

4.1 Initial review of threats and pressures

Construction phase assumptions

4.1.1 The assumptions below are made in this assessment based on best-practice, legal requirements and standard mitigation measures. Where there is a legal requirement which would negate otherwise potential effects then the effects are not considered further in this HRA. This is because it can reasonably be assumed that legally-mandated measures will be implemented irrespective of the presence of internationally important wildlife sites. For example, it is illegal to pollute watercourses under the Environmental Damage (Prevention and Remediation) (England) Regulations 2015 and the Environmental Permitting (England and Wales) Regulations 2016. Similarly, it is illegal to cause the spread of non-native invasive species identified under Schedule 9 of the Wildlife and Countryside Act (1981) (As Amended)[22].

4.1.2 Given the distance of Chilterns Beechwoods SAC and Upper Nene Valley Gravel Pits SPA/Ramsar from the GUC scheme (8-10km) and the absence of air quality sensitivity of the Ensor's Pool SAC, no significant construction traffic flows are expected within 200m of these sites. Therefore, air quality is not discussed further in this report, although this may need to be reviewed when further design information is available at Gate 4.

4.1.3 Assumptions:

- The best-practice procedures detailed in the following documents will be followed for all construction works derived from this option, as a minimum standard:
  - CIRIA C741 Environmental Good Practice on Site Guide (Charles and Edwards, 2015)[18].
  - Environment Agency's Pollution Prevention Guidance Notes19 including PPG1: General Guide to 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).
- Biosecurity measures will be in place to ensure the management of invasive non-native species on construction sites and during controlled activities. The following considerations will be given pre-construction:
  - INNS risk assessment to be undertaken at site feasibility stage.
  - Where INNS are identified, legal requirements and mitigation plan developed at early planning stage.
  - INNS to be included on all site method statements including CEMP and any Ecological Protection Plans. INNS risk to be managed by Clerk of Works and INNS brief given to all site contractors.
  - Where a species requires long-term management (such as Japanese knotweed *Reynoutria japonica*), a specific INNS management plan will be developed.
- The best-practice procedures detailed in the following documents will be followed to reduce the spread of INNS for all construction works derived from these options, as a minimum standard:
  - CIRIA Manual C67920 'Invasive species management for infrastructure managers and the Construction industry'; The Knotweed Code of Practice – managing Japanese Knotweed on development sites.'

[22] Available at https://www.legislation.gov.uk/ukpga/1981/69/schedule/9 Accessed [28 Aug 2024]

- Noise disturbance measures will include:
  - Construction activities will be conducted in accordance with noise limits to avoid disturbance.
  - Programme activities likely to result in disturbance to breeding birds outside of the bird breeding season, in the period April to mid-September inclusive.
  - Programme activities likely to result in disturbance to wintering birds outside of the period October to March inclusive.
  - Construction related noise disturbance can be further minimised by implementing best practice such as BS 5228-1:2009+A1:2014 [23]
- Light disturbance measures will include:
  - Lighting will be kept to a minimum to reduce disturbance. Should the works be undertaken at night and flood lighting required, lighting should be kept to a minimum, and hooded spotlights directed away from potential suitable habitat, to reduce disturbance while ensuring standards for health and safety.
  - The potential impact of artificial light may be minimised through the implementation of best practice such as 'Guidance Notes for the Reduction of Obtrusive Light' [24]

Initial screening of threats and pressures

4.1.4 The following threats/pressures identified for the Upper Nene Valley Gravel Pits SPA/Ramsar will not be affected by the SRO (i.e. no linking pathway exists) and can therefore be dismissed from further consideration without further analysis. These are not discussed further in this HRA.

- Public access / disturbance,
- Planning permission: general,
- Fisheries: Freshwater, and
- Change in land management.

4.1.5 The following threats/pressures identified for the Upper Nene Valley Gravel Pits SPA/Ramsar may be impacted further by the SRO and are discussed further in this section of the HRA.

- Hydrological connectivity.

4.1.6 The following threats/pressures identified for the Chilterns Beechwoods SAC will not be affected by the SRO (i.e. no linking pathway exists) and can therefore be dismissed from further consideration without further analysis. These are not discussed further in this HRA.

- Forestry and woodland management,
- Deer,
- Change in species distributions,
- Invasive species,
- Disease, and
- Public access / disturbance.

4.1.7 This means that all threat and pressures relating to Chilterns Beechwoods SAC can be dismissed.

4.1.8 The following threats/pressures identified for the Ensor's Pool SAC which the SRO will have no impact upon and can therefore be dismissed from further consideration without further analysis. These are not discussed further in this HRA.

[23] The British Standards Institute, 2008. BS 5228-1:2009+A1:2014. Code of practice for noise and vibration control on construction and open sites. Noise. BSI Standards Limited, London.
[24] Institution of Lighting Professionals (2020) Guidance note for the reduction of obtrusive light. Guidance Note1/20.

- Changes in species distribution, and
- Recreational pressure.

4.1.9 The following threats/pressures identified for the Ensor's Pool SAC may be impacted further by the SRO and are discussed further in this section of the HRA.

- Changes to ground water flows (hydrological connectivity).

4.2 Hydrological Connectivity

Background to Water Quality impact pathway

4.2.1 The quality of the water that feeds Habitat sites is an important determinant of the nature of their habitats and the species they support. Poor water quality can have a range of environmental impacts:

- At high levels, toxic chemicals and metals can result in immediate death of aquatic life, and can have detrimental effects even at lower levels, including increased vulnerability to disease and changes in wildlife behaviour.
- Eutrophication, the enrichment of plant nutrients in water, increases plant growth and consequently results in oxygen depletion. Algal blooms, which commonly result from eutrophication, increase turbidity and decrease light penetration. The decomposition of organic wastes that often accompanies eutrophication deoxygenates water further, augmenting the oxygen depleting effects of eutrophication.
- Some pesticides, industrial chemicals, and components of treated wastewater are suspected to interfere with the functioning of the endocrine system, possibly having negative effects on the reproduction and development of aquatic life.

4.2.2 An H1 surface water pollution risk screening assessment for all sampled determinands was undertaken by the Minworth SRO design consultants[25]. This identified 14 determinands which were confirmed as being potentially significant and liable to cause pollution. These determinands were screened-in for modelling. Following engagement with the EA, it was agreed that dissolved oxygen (DO) and temperature should also be modelled. The results of this modelling are captured in GUC SRO Gate 3 Annex 4.4: Water Quality Modelling Report[26].

4.2.3 There is a theoretical risk that transferring recycled water from Minworth to the GUC will cause deterioration of the water quality of the canal. However, the quality of recycled water from the AWTP itself will be controlled in order to comply with the Environmental Damage (Prevention and Remediation) (England) Regulations 2015 and the Environmental Permitting (England and Wales) Regulations 2016. It is considered that this will prevent any deterioration of the water quality of the canal through the quality of the recycled water and thereby any hydrologically connected Habitats Sites. Direct impacts on water quality can therefore be dismissed; however, this will be subject to on-going assessment through water quality modelling and Water Framework Directive (WFD) Assessment.

4.2.4 The main risks associated with the scheme are:

- The new intakes / outfalls / abstractions / bypasses / bank-raising are likely to require in-channel construction works on the GUC. In-channel works can result in temporary habitat degradation through, for example, runoff from accidental pollution events or dust emissions from construction-related activities.
- The operation of the scheme will see up to 115 Ml/d of recycled water being conveyed from Minworth WwRC to the GUC for abstraction at Bletchley. The new water input has the potential to result in temporary increases in surface water levels and flows resulting in water quality changes and alterations to hydrologic/hydraulic processes. Thus, there is potential that changes caused by the transfer could cause deterioration of the GUC and other water bodies in hydraulic continuity with the GUC, although it is acknowledged that discharge standards for key

[25] Minworth Gate 3 Annex A4.1 Surface water Pollution Risk Assessment
[26] GUC Gate 3 Annex 4.4: Water Quality Modelling Report (Draft Report)

substances or parameters would need to be agreed and that work within subsequent Gates will progress this.

Background to Water Quantity, Level and Flow impact pathway

4.2.5 The water level, its flow rates and the mixing conditions are important determinants of the condition of Habitats sites and their qualifying features. Hydrological processes are critical in influencing habitat characteristics in wetlands, terrestrial systems that have hydrological associations (e.g. wet heath) and coastal waters, including current velocity, water depth, dissolved oxygen levels, salinity, and water temperature. In turn these parameters determine the short- and long-term viability of plant and animal species, as well as overall ecosystem composition.

4.2.6 There are potential ecological effects of reduced flow in rivers and connected water-dependent ecosystems. Droughts (ranging in their magnitude from flow reduction to a complete loss of surface water) have both direct and indirect effects on dependent floral and faunal communities. For example, the unique nature of wetlands combines shallow water and conditions that are ideal for the growth of organisms at the basal level of food webs, which feed many species of birds, mammals, fish, and amphibians.

4.2.7 Maintaining a steady water supply is of critical importance for many hydrologically dependent SPAs, SACs and Ramsar sites. For example, in many freshwater bodies and wetlands the hydrological regime is essential for sustaining a variety of foraging habitats for SPA / Ramsar waterfowl species. However, different species vary in their requirements for specific water levels. Splash and / or shallow flooding is required to provide suitable feeding areas and roosting sites for ducks and waders. In contrast, deeper flooding is essential to provide foraging and loafing habitats for Bewick's swans and whooper swans.

4.2.8 Wetland habitats rely on hydrological connections with other surface waters, such as rivers, streams, and lakes. A constant supply of water is fundamental to maintaining the ecological integrity of sites. However, while the natural fluctuation of water levels within narrow limits is desirable, excess, or too little water supply might cause the water level to be outside of the required range of qualifying birds, invertebrate or plant species. This might lead to the loss of the structure and functioning of wetland habitats.

4.2.9 The main risk associated with the scheme is:

- The operation of the scheme will see up to 115 Ml/d of recycled water being conveyed from Minworth WwRC to the GUC for abstraction at Bletchley. The new water input has the potential to result in temporary increases in surface water levels and flows resulting in water quality changes and alterations to hydrologic/hydraulic processes. Thus, there is potential that changes caused by the transfer could cause deterioration of the GUC and other water bodies in hydraulic continuity with the GUC, although it is acknowledged that discharge standards for key substances or parameters would need to be agreed and that work within subsequent Gates will progress this.

Upper Nene Valley Gravel Pits SPA and Ramsar

4.2.10 In respect of hydrological connectivity, the following was established in the Gate 2 Waterbody Connections Report[27]:

- A connection exists between the GUC and the river Nene at Whitton Flood Paddle and Stow Flood Paddle; however, discussions with Affinity Water and the Canal and River Trust have indicated that a sluice lockage and bypass flow system is in place, which limits the overspill of water from the GUC. Changes in water quality will be minimised by the required treatment of water at Minworth WwRC to acceptable water standards to comply with the general legal protection of water quality (as discussed in paragraph 4.2.6). Moreover, as per the design of the water transfer, there will be mechanism put in place to ensure the increased flow will not be utilised by the Northampton Arm, but rather directed southwards along the GUC. This will be an inherent part of the design of the

[27] Gate 2 GUC Annex A4.2 Waterbody Connections Report

project to ensure it meets its objectives. Gate 3 draft hydraulic modelling indicates a maximum 3 cm increase in level at the Gayton Junction with the Northampton Arm[28] of the GUC (well within the Normal Operating Zone (NOZ) of the canals), and therefore any impacts along this branch of the GUC are not considered significant. The presence of the lockage system where the GUC feeds the River Nene also reduces the likelihood of adverse effects on the Upper Nene Valley Gravel Pits SPA/Ramsar site.

4.2.11 Based on the analysis to date, there is therefore no likely significant effect resulting from hydrological connectivity on the Upper Nene Valley Gravel Pits SPA and Ramsar site and this impact pathway is not put forward for Appropriate Assessment. Although this conclusion is considered correct, further analysis of the connectivity between the GUC and the River Nene will be undertaken during Gate 4. The Gate 4 investigation will also involve confirmation of the mechanism put in place to ensure the increased flow will not enter the Northampton Arm, but will be directed southwards along the GUC as per the proposed transfer route.

Ensor's Pool SAC

4.2.12 Ensor's Pool is located immediately south-west of Nuneaton between Heath End Road to the north and Harefield Lane to the south and 1.1 km from the GUC project. It is an abandoned clay pit measuring 3.5 hectares in size with a perimeter of approximately 770 metres and an average depth of 8 metres. A previous dye tracing exercise of the pool by the Environment Agency has confirmed Ensor's Pool is groundwater fed and is not hydraulically linked to nearby ordinary watercourses.

4.2.13 There is therefore no likely significant effect resulting from hydrological connectivity on the Ensor's Pool SAC and this impact pathway is not put forward for Appropriate Assessment.

4.3 In-combination Effects

4.3.1 The following plans and projects are considered to have the potential to act in-combination with the SRO:

- Minworth Strategic Resource Option (SRO)
- Severn Trent Drainage and Wastewater Management Plan (Final 2023)

4.3.2 However, no pathways have been identified that could result in an LSE alone. There is no potential for 'in combination' effects on the Upper Nene Valley Gravel Pits SPA/Ramsar from the GUC scheme because water quality will be treated to an acceptable standard before being discharged into the GUC in order to comply with water quality legislation, and there will be mechanism put in place to ensure the increased flow will not be utilised by the Northampton Arm, but rather directed southwards towards the proposed new intakes, Given the absence of impact pathways, there is no potential for cumulative effects from this scheme. No further assessment is required.

4.4 Conclusion

4.4.1 Three Habitats Sites were considered in the Likely Significant Effects Assessment. These were Upper Nene Valley Gravel Pits SPA/Ramsar site, Ensor's Pool SAC and Chilterns Beechwoods SAC. Chilterns Beechwoods SAC was dismissed for likely significant effects on the basis that there are no connecting pathways of impact between the GUC and the SAC, in addition to the fact the SAC is not dependent on particular water levels or flows. Ensor's Pool was considered but was dismissed for likely significant effects on the basis that the SAC is groundwater fed and is not linked to nearby watercourses. Likely Significant Effects on Upper Nene Valley Gravel Pits SPA/Ramsar were dismissed on the basis that water quality will be treated to an acceptable standard before being discharged into the GUC in order to comply with water quality legislation, and there will be mechanism put in place to ensure the increased flow will not be utilised by the Northampton Arm, but rather directed southwards towards the proposed new intakes,

[28] Gate 3 GUC Annex A4.1 Hydraulic Modelling report (Draft)

4.4.2 It has therefore been possible to conclude no likely significant effects on any Habitats Sites will arise either alone or in combination with other plans or projects. However, this conclusion will be kept under review as the HRA work for Gate 4 is undertaken.

Appendix A Location of Habitats Sites

Figure 3 Habitats Sites relevant to the GUC SRO

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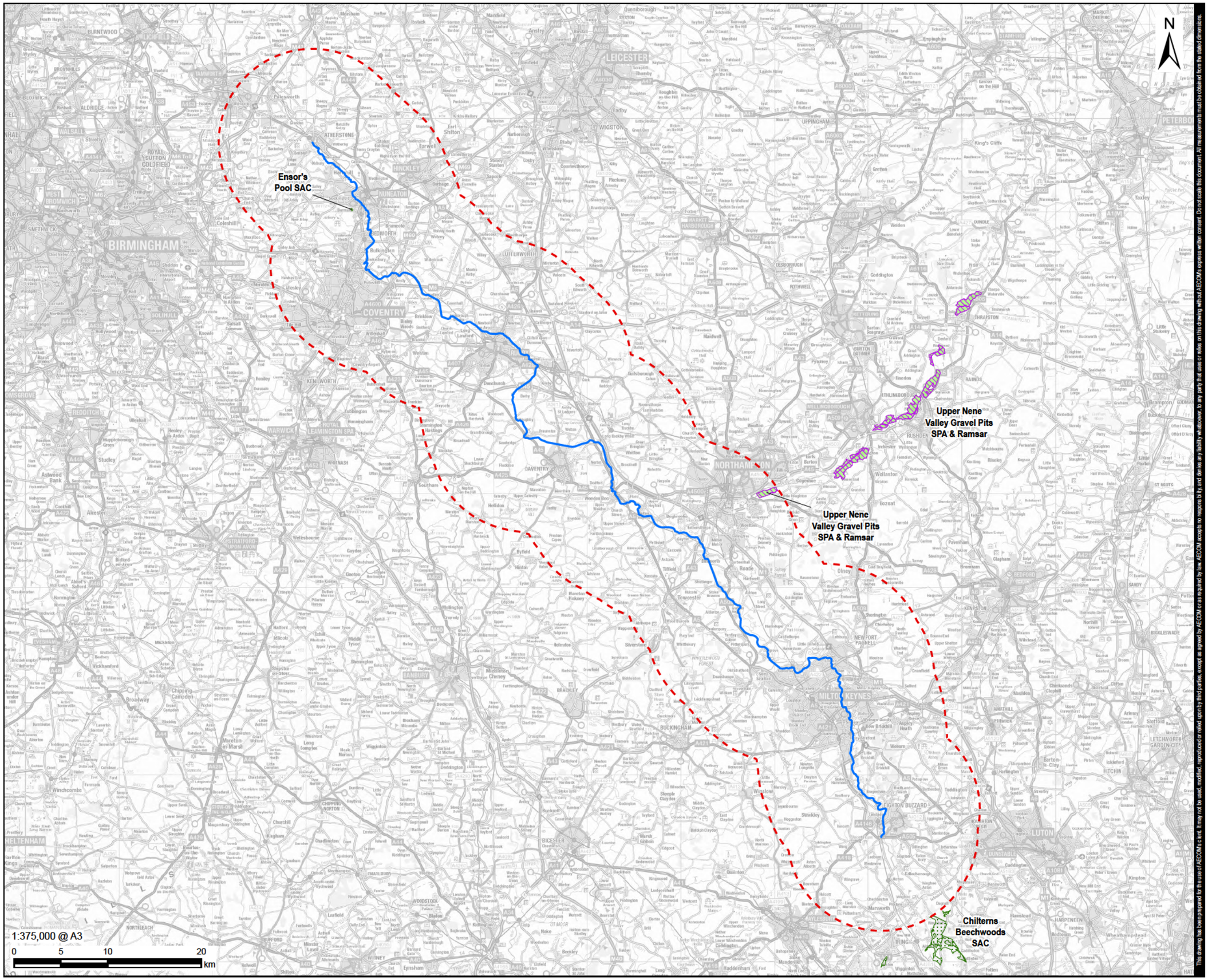

AECOM

PROJECT

Grand Union Canal Transfer

GUC Minworth Gate 3
Environmental Monitoring

CLIENT

Affinity Water, Severn Trent Water and Canal & River Trust

CONSULTANT

AECOM Limited
Midpoint
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LEGEND

- Canal Transfer Route
- 10km Study Area
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Ramsar

NOTES

ISSUE PURPOSE

FINAL

PROJECT NUMBER

60702564

FIGURE TITLE

Grand Union Canal
Habitat Regulations Assessment

FIGURE NUMBER

60702565-AW-GUC-000-HRA-1