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A proposed reservoir in the Fens

Supporting Environmental Information Report

October 2025

Contents

Tables

Images and Figures

1 Introduction

1.1 Background

1.1.1 This Supporting Environmental Information Report (SEIR) has been prepared as part of a package of information presented for phase three consultation on the proposed Fens Reservoir and its associated water infrastructure (the Project).

1.1.2 This SEIR is part of a suite of consultation materials for our phase three consultation (see Table 1-1). It has been prepared to provide the public and stakeholders with information on how the people and communities and the natural and historic environment have been and will continue to be a central part of the evolving design of the proposals.

1.2 The Project

1.2.1 The East of England is the driest and fastest-growing region in the country and is home to many unique and precious landscapes that rely on water. This creates particular challenges for water management. Weather is becoming more extreme and an increasing population and ambitious growth strategies place greater emphasis on the need for water supply resilience during extreme drought. Water abstraction from environmentally sensitive areas also needs to be reduced as set out in the National Framework for Water Resources (Environment Agency, 2020 as updated in 2025).

1.2.2 The Water Resources East Regional Water Resources Plan (Water Resources East, 2023) and final 2024 Water Resource Management Plans (WRMPs) for Anglian Water (2025) and for Cambridge Water (2025) set out a best value plan for meeting the water supply challenges and the long-term vision to deliver greater environmental improvement by setting an environmental destination. All the plans have considered options to reduce demand for water, such as leakage reduction, and options to provide additional water. The scale of the challenge is such that it cannot be met through demand management solutions alone. The WRMPs, as well as the Water Resources East Regional Water Resources Plan, are supported by water resources modelling that has identified the need for two new strategic raw water reservoirs in the region to address part of the supply deficit – the Fens Reservoir and Lincolnshire Reservoir.

1.2.3 The proposed Fens Reservoir would provide a safe, clean, resilient drinking water supply for future generations and allow Anglian Water and Cambridge Water to reduce or cease abstractions from the environment that may be detrimental, as well as enhancing the region's drought resilience for future generations. The Project would assist in the delivery of the WRMP best value objectives, by supporting the drive for low operational carbon and biodiversity net gain.

1.2.4 The Project is being progressed through the delivery framework overseen by the Regulators' Alliance for Progressing Infrastructure Development and has been designated by the Secretary of State for the Department for Environment, Food and Rural Affairs (Defra) as a project of national significance that requires development consent through the Development Consent Order (DCO) regime.

1.2.5 The Project is anticipated to involve the construction, commissioning and operation of the following:

- Water storage reservoir with an approximate capacity of 55 million cubic metres (Mm^3) and a useable volume of 50Mm3, including embankments and infrastructure required for the operation of the reservoir.
- Water abstraction infrastructure.
- Infrastructure required to transfer water to the reservoir, and from the reservoir to supply potable (drinking) water to the water supply network for Anglian Water and Cambridge Water customers. This includes abstraction infrastructure, pipelines, pumping stations and service reservoirs.
- Water treatment infrastructure, including inter-catchment treatment measures.
- Other associated proposed works, for example, including renewable energy and bulk supply infrastructure.

1.3 The phase three consultation

1.3.1 The phase three consultation, which runs from 15 October to 10 December 2025, presents the latest proposals for the reservoir and associated water infrastructure. It also shows the early thinking around proposed construction plans for the reservoir and its associated water infrastructure, as well as early information on potential environmental impacts of the Project.

1.3.2 The consultation materials also show how designs have evolved since the phase two consultation in 2024, including how feedback has been used in the development of the proposals.

1.3.3 It is the current intention to carry out a further public consultation before submitting an application for development consent in accordance with the Planning Act 2008.

1.3.4 Further information about our consultation can be found in our Approach to Community Consultation document (Anglian Water and Cambridge Water, 2025a).

Supporting information

1.3.5 A series of documents have been published for this phase three consultation. All of these can be viewed online at **www.fensreservoir.co.uk/documents**. Table 1-1 identifies the documents published for the phase three consultation and their contents.

Table 1-1: Supporting information

Consultation brochures	
Phase three consultation - reservoir site proposals	Information on our phase three design proposals for the main reservoir site, including potential features and opportunities for recreation and the environment. This brochure also outlines the operation of the reservoir and our approach to managing traffic and transport, construction, and power and renewable energy.

Phase three consultation - associated water infrastructure proposals	Information on our proposals for the associated water infrastructure needed to transfer water to and from the reservoir and in to supply. This includes information on potential locations for the infrastructure, emerging design proposals and our approach to construction.
Approach to Community Consultation (Anglian Water and Cambridge Water, 2025a)	This document sets out how we are carrying out our phase three consultation, including who we will consult, how we will publicise the consultation, how people will be able to take part and how feedback can be provided.
Supporting technical information	
Supporting Environmental Information Report	This document – this report explains what we already know about the environment in relation to our proposal and what we're doing to identify and assess any impacts as part of the Environmental Impact Assessment process. It also outlines the types of solutions we could implement to manage these impacts during construction and operation.
Design Refinement Report (Anglian Water and Cambridge Water, 2025b)	This report explains in more technical detail the work we've done to develop our proposals between our last phase of consultation and now. It includes information about the decisions we've made as part of the design proposal journey for both the main reservoir site and associated water infrastructure.

1.4 The purpose and structure of the Supporting Environmental Information Report

1.4.1 This SEIR has been prepared to present the key sensitivities and potential environmental impacts of the Project that are known at this early stage in development, as well as opportunities for mitigating these impacts and effects. The environmental information presented in the SEIR is based on the understanding of the Project proposals, as presented in the Environmental Impact Assessment (EIA) Scoping Report (Anglian Water and Cambridge Water, 2024a). Subsequent refinements to the Project proposals as discussed in the Design Refinement Report (Anglian Water and Cambridge Water, 2025b) are also reflected in this document.

1.4.2 An outline of the Project and overview of its construction is presented in Chapter 2. For more detail it is recommended that the SEIR is read with reference to the description of the current proposals presented in the Design Refinement Report (Anglian Water and Cambridge Water, 2025b).

1.4.3 Chapter 3 of the SEIR provides an introduction to the environmental assessment approach and an overview of the potential impacts of the Project, as well as potential mitigation measures that are being considered that may be implemented.

1.4.4 The SEIR has been divided into chapters reflecting the main components of the Project:

- Chapter 4: Sources of supply and raw water transfers
- Chapter 5: Reservoir site and water treatment works
- Chapter 6: Treated water transfers and service reservoirs at the connections into the supply network.

1.4.5 Each chapter has been subdivided to provide information related to the environmental aspects considered in the environmental assessment. The environmental aspects have been grouped together in a way that best informs the communities and their likely concerns:

- people and communities, which includes:
  - visual amenity
  - noise and vibration
  - air quality
  - traffic and transport
  - agriculture
  - socio-economics and community
  - access and amenity
  - human health
- the natural environment, which includes:
  - terrestrial biodiversity
  - aquatic biodiversity
  - geology, soils, agriculture and land quality
  - flood risk
  - water resources
- landscape and the historic environment, which includes:
  - historic environment (including built heritage and archaeology)
  - landscape.

1.4.6 Consideration of carbon and greenhouse gas emissions, climate resilience, material assets and waste, strategic socio-economic issues and strategic transport issues are addressed from a Project-wide perspective in Chapter 7 of this report.

2 Project outline

2.1 Overview of the proposals

2.1.1 The Project involves the construction, commissioning and operation of a new non-impounding reservoir with an approximate capacity of 55Mm^3, together with the associated water infrastructure required to convey water to the reservoir, treat it and facilitate the supply of potable water to Anglian Water and Cambridge Water customers, as well as other associated development.

2.1.2 A non-impounding reservoir is defined as a reservoir that does not obstruct the flow of a river and is normally filled by pumping water into it. The term 'associated water infrastructure' refers to water sources infrastructure, water treatment works and water supply infrastructure. Together, these components transfer raw (untreated) available water from watercourses to the proposed reservoir for storage. The water is then treated to create potable water, which is transferred and stored locally before being supplied to homes and businesses. The geographical extent of the Project showing the reservoir and the associated water infrastructure is presented in Figure 1-1.

2.1.3 The process to enable the provision of water into supply can be summarised in the following simplified steps:

- Water is abstracted from the identified sources. These sources are existing watercourses from which available water would be abstracted, under relevant authorisation, for onward transfer to the reservoir. Abstraction infrastructure includes intakes, screens, microfiltration plant and pumping stations.
- Water is transferred to the reservoir. Water would be transferred from the sources via existing watercourses or by direct pipeline. Infrastructure associated with the transfers would include the pipelines themselves plus associated valves and access points.
- Water is stored in the reservoir until needed. Features of the reservoir are anticipated to include:
  - infrastructure to control, pump and discharge water into the reservoir and transfer it to the water treatment works
  - pre-treatment and supply infrastructure
  - spillway, drawdown tower and drawdown test pond
  - recreational lagoon.
- Water is abstracted from the reservoir and treated to potable quality. Infrastructure would include the water treatment works buildings and process units, pumping station, service reservoir and sludge treatment reedbeds.
- Treated water is transferred via new pipelines to connection points within the existing supply system, with localised storage in new service reservoirs. Infrastructure associated with the transfers would include the pipelines themselves plus associated valves and access points.

2.1.4 Image 2-1 summarises the various parts of the infrastructure which comprise the Project and how these work together to provide the system for abstracting, storing, treating and distributing the water.

2.1.5 The areas of land within which the Project infrastructure and the associated construction activities would be located is defined as the Indicative Project Boundary. This boundary reflects the areas of land as identified at the phase three consultation and will be subject to change as the Project proposals are further developed. The phase three consultation Indicative Project Boundary is shown on Figure 1-2.

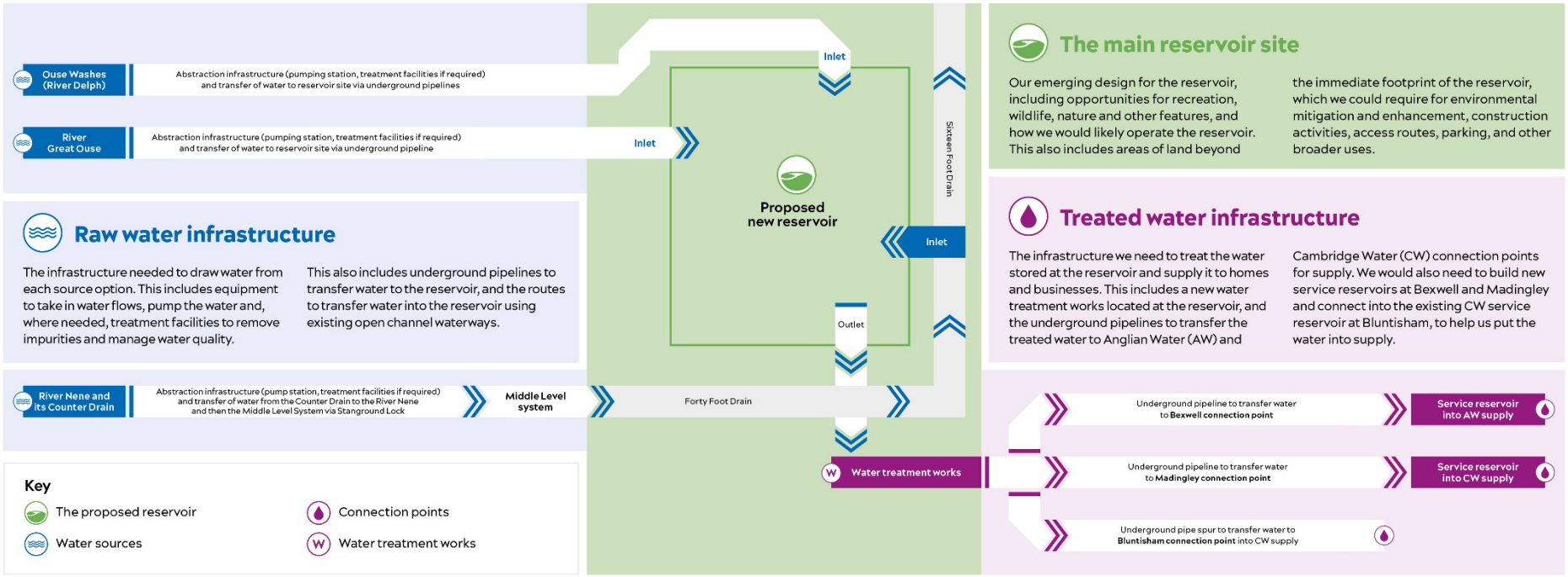

Image 2-1: Component parts of the Project

2.2 Overview of construction phase

2.2.1 The Project's earliest date for provision of water into supply is December 2036, as set out in the Water Resource Management Plans for Anglian Water (2025) and Cambridge Water (2025). Construction is anticipated to take six to eight years, with construction activities anticipated to extend beyond the supply date as landscaping and other works are finalised.

2.2.2 The works would be phased within the reservoir site and along the pipeline corridors due to the large scale of works required. This is particularly relevant to the pipeline corridors where there is the opportunity for installation of the pipeline to be completed progressively, reducing the overall period of construction work at each location. It would, however, only be possible to fully commission the pipelines once the whole system is ready.

2.2.3 The proposed construction programme is divided into three main phases:

- Early works – these activities are primarily essential survey and investigation work and would be carried out before and after the submission of the DCO application.
- Enabling works – these works would begin should development consent be granted, prior to starting main construction activities. Enabling works would be carried out to establish the construction working area and prepare for the start of the main construction works.
- Main works – this phase would commence should development consent be granted and would be the longest phase of activity. Main works would include the construction of the reservoir, water treatment works, associated water infrastructure, environmental mitigation measures and all necessary temporary works.

Testing and commissioning

2.2.4 Testing and commissioning would take place at the end of the construction phase. The operational features of the reservoir and associated water infrastructure works would be tested to ensure safe and effective operations, for which it has been designed. The commissioning would cover all aspects of the Project including civil, mechanical, electrical, telemetry and control systems as well as environmental, recreational and landscape elements.

Construction traffic

2.2.5 During construction, travel demand is likely to vary and would primarily involve transporting construction materials and plant for building the reservoir and associated infrastructure, including the water treatment works and transfer pipelines, as well as daily travel by the construction workforce.

2.2.6 It is anticipated that the Project would require large volumes of construction material to be transported to the site. If suitable materials are not available locally, these would need to be sourced and transported from further afield.

2.2.7 It is currently anticipated that construction materials would be delivered to the site in line with demand, ideally bringing them in as they are needed. However, due to

the seasonal nature of the construction programme, there may be opportunities to stockpile certain materials on site to maintain a consistent delivery profile.

3 Environmental Impact Assessment approach and methodology

3.1 Introduction

3.1.1 The scale of the proposed Fens Reservoir project means an Environmental Impact Assessment (EIA) is required under the relevant provisions of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the 'EIA Regulations'). EIA is a process required for certain projects by virtue of their size, activities or location and their potential to give rise to significant effects on the environment. The outcome of the EIA process will be presented in an Environmental Statement (ES).

3.1.2 The ES is a key document that will be submitted as part of the DCO application. Its purpose is to ensure that those making the decision on whether or not to grant a DCO are well-informed regarding the likely significant environmental effects of the proposals and are able to take these into account in making their decisions.

3.1.3 The focus of the Project's approach to EIA is to ensure that environmental considerations are central to decision-making throughout the development of the proposals, and that a robust and proportionate approach is applied to the prediction and assessment of likely significant environmental effects that could occur as a result of the Project.

3.2 Scope of the EIA

3.2.1 The aspects of the environment that will be addressed in the EIA are described in Section 1.4 of this report. These have been identified through a scoping process that was undertaken to identify which environmental receptors or assets were likely to experience significant effects, and which were unlikely to experience such effects. The scoping process also confirms the methodologies to be applied, in line with aspect-specific guidance and industry good practice.

3.2.2 An EIA Scoping Report (Anglian Water and Cambridge Water, 2024a) was issued to the Planning Inspectorate in October 2024. The Planning Inspectorate responded with its Scoping Opinion (Planning Inspectorate, 2024) in December 2024. The EIA, as it is being implemented, is based on both documents. The EIA Scoping Report and Scoping Opinion are both available on the Planning Inspectorate website for the Project (https://national-infrastructure-consenting.planninginspectorate.gov.uk/projects/WA010004/documents).

3.3 Identifying the baseline environment

3.3.1 The EIA process is principally concerned with predicting changes in environmental conditions that would be caused by the Project. This entails first identifying the environmental conditions that would exist if the development did not go ahead ('baseline conditions', or 'the environmental baseline').

3.3.2 Data to inform baseline conditions is obtained through two main methods:

- By desk-based surveys, which collate information from numerous publicly available sources, and from other specialist data repositories. Desk-based surveys use information sources such as local authority historic environment records, Natural England datasets for European and UK statutory designated sites, priority habitats and ancient woodland and Environment Agency datasets relating to flood risk.
- By site visits and surveys to directly gather primary data. Many different types of survey are used, undertaken by specialists in different fields. Surveys started in 2023, continued in 2024 and 2025 with further surveys planned for 2026 and later, where required. Surveys that have been undertaken or are planned for the next two years include habitat and protected species surveys, traffic surveys, air quality and noise surveys and archaeological trial trenching.
- Both desk-based and site survey techniques provide raw data. To identify baseline conditions, the data is subject to collation, analysis and interpretation, and in some cases computer modelling such as for air pollutant concentrations and noise levels.

3.4 Identifying and assessing environmental effects

3.4.1 It is the aim of EIA to identify and assess likely significant environmental effects. Environmental impacts are changes in baseline environmental conditions caused by the construction or operation of the development. An environmental effect is the consequence of that impact for a sensitive receptor or resource. For instance, where the impact is an increase in ambient levels of noise, one effect might be a reduction in the breeding success of a population of a species affected by that noise.

3.4.2 Impacts can be identified in most cases by comparing the development proposals with the baseline conditions to show what would be changed as a result. In some cases, this may entail the use of analytical processes or computer modelling, for instance where the impact is a potential change in noise caused by construction activity, or a change in air pollutant concentrations as a result of construction traffic.

3.4.3 The significance of effect that follows an impact is identified through professional judgement and the application of specified guidelines and criteria. The approach to this process is set out in more detail in the EIA Scoping Report (Anglian Water and Cambridge Water, 2024a).

3.4.4 When seeking development consent, it is intended that the 'Rochdale Envelope' approach will be used. This is an established approach for projects of this scale where development consent is sought for the parameters of the proposed project (e.g. its maximum height, width, length, etc.) based on a reasonable worst-case assessment of those parameters. The EIA will apply the 'Rochdale Envelope' approach to assessment, taking account of where there may be some uncertainty in the Project proposals, for example, where design features or construction approaches may need to be adjusted to account for ground conditions. To account

for uncertainty and flexibility within the proposals, the EIA will assess a realistic worst-case in terms of the potential effects on the relevant receptor or resource.

3.4.5 In addition to impacts and effects caused by the Project itself, the EIA will seek to identify effects that would occur as a result of the interaction of this development with other reasonably foreseeable projects; or whose significance would be increased as a result of such interactions. This section of the EIA is referred to as 'Cumulative Effects' assessment.

3.5 Consultation and engagement

3.5.1 Consultation and engagement are a key component of the EIA, and the DCO process as a whole. Throughout the EIA, the Project will seek feedback from consultees in relation to key environmental issues, proposed methodology and design approaches. Consultation has taken place and will continue throughout the pre-application stage with specific stakeholders who may be affected by or have an interest in the Project. These include:

- several statutory environmental bodies, as well as local authorities and other organisations
- technical consultees including organisations with interests that may be affected
- landowners and other land interests who may be affected
- local communities.

3.5.2 In addition, technical consultees with relevant specialist expertise and the wider general public have been and will continue to be included in the consultation process.

3.5.3 The approach to consultation and engagement is appropriately tailored to the different types of consultees depending on the nature of their interest in the Project. The current phase three consultation and this SEIR form part of this activity. Please find out more in our Approach to Community Consultation (Anglian Water and Cambridge Water, 2025a).

3.6 Mitigation of environmental effects

3.6.1 Where potential for a significant effect has been identified during the EIA, the Project will identify measures to mitigate the impact so as to remove or reduce the significance of the effect as far as practicable.

3.6.2 Throughout the EIA process, the focus will be on early identification of potential effects so that mitigation measures can be identified at the earliest opportunity. This gives us the opportunity to embed mitigation into our Project design.

3.6.3 Mitigation can be considered as a hierarchy as defined by the Institute of Environmental Management and Assessment (IEMA) guidance is shown in Image 3-1.

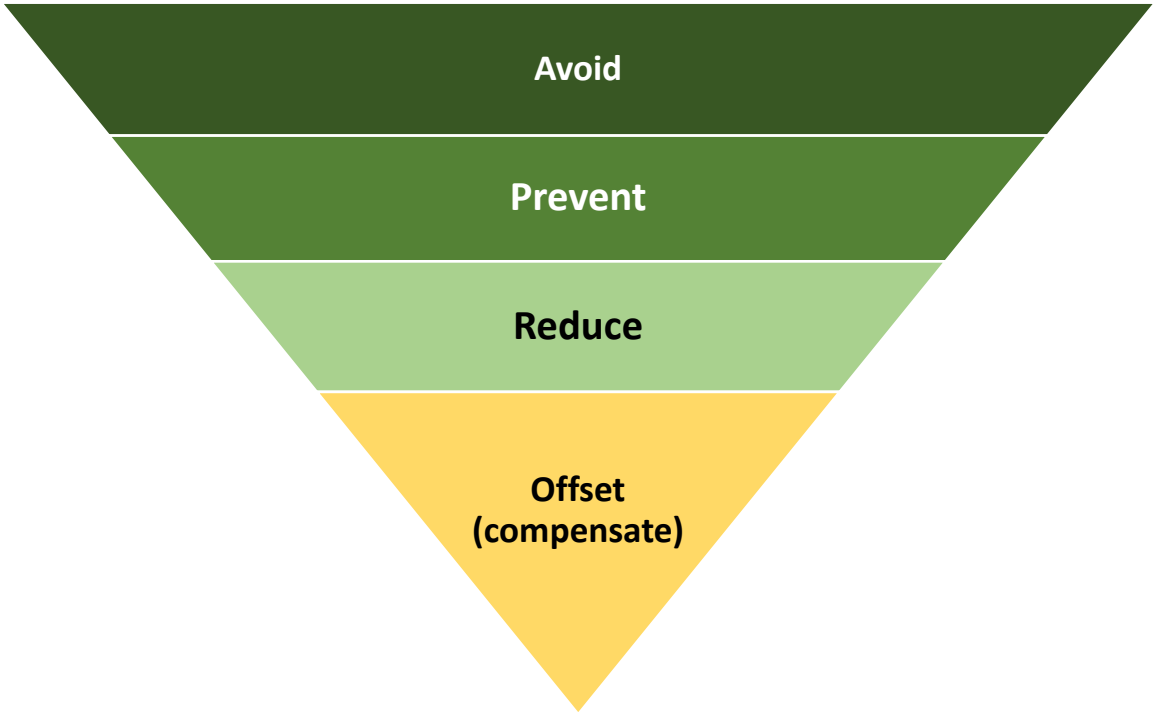

Image 3-1: Mitigation hierarchy (IEMA, 2024)

3.6.4 The most desirable measures are those that enable the occurrence of an impact to be avoided, or where that is not possible, measures that intervene to prevent the effect from being felt. This most commonly entails making choices about the design of the Project, affecting the scale or location or other aspects of the whole development or a particular feature of the development. Mitigation measures that are built-in to the design in this way are referred to as 'embedded' mitigation and will be identified as commitments in the ES.

3.6.5 The Project is seeking to maximise the opportunity for embedded mitigation by including members of the EIA team in all key decision-making. This supports optimised decisions, such as choosing a route option for a pipeline that avoids a key ecological habitat, or using specific construction methods to reduce impacts on nearby sensitive receptors.

3.6.6 Good practice mitigation measures are standard approaches and actions primarily related to the construction phase to avoid or reduce environmental impacts. These measures will be incorporated into appropriate environmental management plans and would be applied throughout the delivery of the Project to support responsible delivery, manage expectations, and set a consistent approach to avoiding or reducing impacts.

3.6.7 Where an effect cannot be avoided or reduced through measures embedded in the design or by application of good practice measures, then additional mitigation will be considered to reduce the scale of impact or the significance of the effect, such as the provision of replacement habitat on site to replace that lost as a result of the Project.

3.6.8 In some cases, it is not possible to replace a loss directly. The best approach in these circumstances is often to provide an alternative, for instance by contributing

to habitat creation outside the proposed project boundary. This represents the last option in the mitigation hierarchy.

3.6.9 Enhancement measures may be incorporated into the Project. Enhancement measures sit above and go beyond the mitigation works that are required to avoid or reduce any adverse effects of the Project and do not form part of assessment of impacts. Enhancements will be reported under the headings of 'Environmental Net Gain' (ENG) and 'Biodiversity Net Gain' (BNG). Further information on ENG and BNG is included in .

3.6.10 It is intended that outline management plans would be submitted as part of the DCO application and would specify the reasonable and practicable measures, practices and standards of work that would be applied during construction of the Project so that its potential significant adverse environmental effects on the environment are avoided so far as is practicable.

3.6.11 The ES will identify those measures embedded in design, good practice and additional measures, together with the means by which they are secured for delivery, and any monitoring required during or after construction.

3.7 Other environmental assessments

3.7.1 The ES will be prepared considering other relevant environmental assessment regimes that are required, and the supporting documents that will be submitted as part of the DCO application. The other assessments are described below.

Habitats Regulations Assessment

3.7.2 Habitats Regulations Assessment (HRA) is required for plans and projects likely to have a significant effect on a European or internationally important site for nature conservation. Further information on our ongoing approach to HRA is set out in Appendix B.

Water Framework Directive Assessment

3.7.3 The Water Framework Directive (WFD) compliance assessment will determine if the Project is compliant with The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (WFD Regulations) in terms of preventing deterioration of the status of WFD water bodies and allowing future targets for water bodies to be achieved. Further information on our ongoing approach to WFD assessment is set out in .

Flood Risk Assessment

3.7.4 A Flood Risk Assessment (FRA) will be undertaken and reported within a standalone report for the DCO application. The FRA will demonstrate how the Project would manage flood risk from water sources potentially affected by the Project. It will also consider potential changes in flood risk to off-site locations as a result of the Project. Information of the assessment of flood risk is provided in the natural environment sections of the SEIR.

Equalities Impact Assessment

3.7.5 Potential impacts on equality arising from the Project will be considered in a separate Equalities Impact Assessment (EqIA). The ongoing approach to EqIA is set out in .

Environmental Net Gain and Biodiversity Net Gain

3.7.6 An assessment of how the Project would deliver wider Environmental Net Gain (ENG) opportunities will be included in the DCO application. ENG will include BNG and other wider benefits to the environment, including improvements to natural capital. Further information on our ongoing approach to ENG and BNG is set out in .

3.8 Other consents, approvals and permits

3.8.1 It is anticipated that in addition to the DCO, other consents, approvals and permits may be required to facilitate the planning and design development, construction and operation of the Project. At this stage it is not yet determined which consents and permits fall within the DCO application process, and which may be required separately. This will be determined through engagement with relevant stakeholders. The information collated as part of the EIA process will be used, where appropriate, to support the applications for these consents and permits.

4 Raw water transfers

4.1 Raw water transfers: current proposals

4.1.1 The Project requires new infrastructure to abstract raw water and transfer it from the identified sources to the proposed reservoir. The proposed abstraction sources and transfer methods are described below.

- The River Great Ouse system – either from the Ouse Washes (River Delph) via direct pipeline; or the River Great Ouse (at Earith) via direct pipeline to the reservoir. Work is currently ongoing to determine the preferred abstraction option for this source.
- The Middle Level system, via the Sixteen Foot Drain adjacent to the reservoir site.
- The River Nene into the Middle Level system, via the Sixteen Foot Drain adjacent to the reservoir. To compensate for the water taken from the River Nene, if required, water could be transferred from the Counter Drain (Nene), following intermediate treatment, into the River Nene upstream of the Dog-in-a-Doublet sluice.

4.1.2 Further infrastructure that would be required to facilitate the abstraction and transfer of raw water may include, but is not limited to:

- intake structures
- pumping stations and associated compounds
- screening and filtration systems
- inter-catchment treatment measures.

4.1.3 The infrastructure listed above, along with the pipelines and open channels, are referred to together as the raw water transfer infrastructure.

4.1.4 Figure 1-1 shows the proposed abstraction locations, raw water transfers to the reservoir and the associated construction working areas and construction traffic routes.

4.1.5 Section 2.3 and Chapter 6 of the Design Refinement Report (Anglian Water and Cambridge Water, 2025b) provide further detail on sources of supply and raw water transfer infrastructure proposals.

Raw water transfers: construction

4.1.6 An overview of the construction phase is included in Section 2.2. More detailed construction proposals for the sources of supply and raw water transfers infrastructure, are described in Section 8.5 of the Design Refinement Report (Anglian Water and Cambridge Water, 2025b).

4.1.7 The construction of the Project would require the movement of materials, plant and the construction workforce to and from the construction sites. Construction traffic would route to construction working areas along the raw water transfer infrastructure from the strategic road network primarily using the A-road network with some sections of B-roads and minor roads required where no other reasonable option is available. Further information on construction traffic is provided in Section 7.3 of the Design Refinement Report (Anglian Water and

Cambridge Water, 2025b) and Figure 1-1 shows proposed construction traffic routes.

Raw water transfers: commissioning, operation and maintenance

4.1.8 It is anticipated that commissioning activities may include flushing of pipework, testing of equipment (e.g. leakage, pressure and output testing) and testing of operational and maintenance procedures. Operational activities include periodic maintenance and repair visits, such as for the clearance of debris from abstraction screens.

4.2 Raw water transfers: initial environmental information

4.2.1 Impacts on the environment surrounding the abstractions and raw water transfers infrastructure resulting from the construction and operation of the Project are discussed below. The scale of these impacts would depend on the overall duration, frequency and proximity of the activities and features associated with the Project in relation to nearby receptors.

4.2.2 The ongoing EIA process described in Chapter 3 will assess effects of these impacts on receptors at the next stages in the development of the Project proposals. These assessments will inform the development of the design of the Project and the methodologies for construction, including the identification of mitigation measures to avoid or reduce likely significant environmental effects. Further information on the approach to mitigation is provided in Section 3.6 and examples of mitigation measures are provided in Appendix A.

Raw water transfers: people and communities

Context

4.2.3 The proposed raw water transfer infrastructure is to be located within the administrative areas of Fenland District Council, Huntingdonshire District Council, South Cambridgeshire District Council, Peterborough City Council and Cambridgeshire County Council. The communities living closest to the proposed infrastructure include, but are not limited to Manea (Ouse Washes source and transfer), Whittlesey (River Nene and counter drain source and transfer) and Chatteris, Somersham, Colne, Pidley and Bluntisham (Great Ouse at Earith source and transfer) (see Figure 1-2).

4.2.4 The raw water infrastructure has generally been sited away from settlements in order to avoid and minimise effects on local communities. The most populated area within close proximity to water abstraction infrastructure is Stanground, Peterborough, near to the Stanground Lock site. The nearest residential areas are approximately 100m to the south of Stanground Lock with an isolated property immediately adjacent to the lock. At the Welches Dam Pumping Station location, there are a small number of nearby residential properties. The location of the proposed pipeline from the Ouse Washes to the reservoir is very sparsely populated with a few isolated residential properties nearby and the pipeline route does not interact with any settlements. The proposed Earith abstraction point on the River Great Ouse is not located near any residential properties and the proposed pipeline route avoids settlements. Although the polygon identified for

the pumping station extends closer to Bluntisham, the proposed location for infrastructure within the polygon is approximately 850m to the south of the village.

4.2.5 Visual receptors (locations where visual impacts could be experienced) around the new pumping stations and abstraction points are located to the east of Peterborough at Whittlesey and along the B1040 North Side, North Bank and Levitt's Drove; to the west of the Ouse Washes at Welches Dam, Purls Bridge and Manea; from Bluntisham's southern settlement edge and PRoWs to the north-west of the River Great Ouse.

4.2.6 The area within and surrounding the Indicative Project Boundary for the raw water transfers is characterised by a network of PRoWs and amenity spaces such as parks, playing fields and sports facilities that support outdoor recreation and community wellbeing. People using the PRoW network, road network and navigable waterways outside of settlements have views of open agricultural land, as do residents of properties on the outer edges of settlements.

4.2.7 There are PRoWs adjacent or in very close proximity to Stanground Lock and the Dog-in-a-Doublet sluice near the abstraction infrastructure required to facilitate the River Nene transfer. There are also PRoWs along both sides of the Counter Drain/Old Bedford River and Forty Foot Drain near Welches Dam Pumping Station close to the proposed Ouse Washes abstraction point, as well as a Royal Society for the Protection of Birds (RSPB) visitor centre for the Ouse Washes nature reserve. PRoWs line either side of the River Great Ouse close to the proposed Earith abstraction point.

4.2.8 The A and B-roads that are currently proposed to be used by construction traffic (including Heavy Goods Vehicles (HGVs)) are primarily rural in nature, although some pass through settlements. The local roads that are proposed to be used are also rural in nature. It is currently anticipated that HGVs would need to use B-roads and local roads to some degree, where it is the only reasonable way of accessing many construction areas.

4.2.9 As is typical for rural areas, information from the 2021 Census (Office for National Statistics, 2022) on commuting patterns indicates a high reliance on private vehicles. The data also indicates that walking to work is less common than national and regional averages, suggesting limited active travel infrastructure or accessibility. These patterns are relevant when considering construction traffic routes and potential disruptions to local travel and access.

4.2.10 Land parcels that fall within the Indicative Project Boundary have been identified and relevant engagement is ongoing with affected landowners. Detailed data on agricultural holdings and the nature of the farm enterprises will be collected as part of our ongoing baseline data collection to inform future stages of the EIA.

4.2.11 The existing noise levels at receptors with the potential to be affected by activities associated with the proposed sources of supply and raw water transfers infrastructure will vary according to whether they are located in a rural or more built-up area. However, no Noise Important Areas (noise 'hotspots' where the 1% of the UK population affected by highest noise levels from major roads or railways are located (Defra, 2019a; Defra 2019b)) have been identified in the vicinity of proposed raw water abstraction infrastructure. Higher existing noise levels would

be expected at locations closer to transport infrastructure and industrial activity, with Defra's strategic noise mapping showing higher noise levels experienced near the A142 near Chatteris, A1123 near Bluntisham and the Ely–Peterborough railway north-west of Manea railway station. Agricultural noise sources such as the intermittent sound of tractors would influence noise levels in the rural areas immediately surrounding the raw water infrastructure.

4.2.12 Baseline noise surveys have been undertaken at locations representative of receptors that may be affected by operational activities at the abstraction and pumping station sites to understand the existing noise environment. The methodology and locations used for the surveys were agreed in advance with representatives of the local planning authorities and county councils (Peterborough City Council, Fenland District Council, Huntingdonshire District Council, South Cambridgeshire District Council and Cambridgeshire County Council). Noise levels were measured continuously for over one week. The data has been processed to present 'typical' noise levels for different times of the day, evening, night and weekend.

4.2.13 Information gathered from desk-based studies to understand the existing air quality environment has determined that no exceedances of the Air Quality Objectives for nitrogen dioxide (NO_2), PM_{10} (particulate matter with a diameter of 10 micrometres or less) and $PM_{2.5}$ (particulate matter with a diameter of 2.5 micrometres or less) were likely at locations that may be affected by the installation of raw water transfer infrastructure. Air Quality Objectives are defined in the UK Air Information Resource (Defra, no date) as air quality policy targets set out in the UK Government's Air Quality Strategy (Defra, 2023a). Exceedances are also not likely along potential construction transport routes, although the Huntingdon Air Quality Management Area (AQMA) (areas where the local authority has identified that Air Quality Objectives are not likely to be achieved (Defra, no date)) is located close to the A141.

4.2.14 Following engagement with local authorities, baseline air quality monitoring is currently being undertaken, focusing on NO_2 as an indicator of exhaust emissions. Monitoring locations have been chosen to represent areas of sensitive receptors that may be affected by construction traffic emissions.

4.2.15 Information gathered from desk-based studies has been collated to form an understanding of the local communities surrounding the sources of supply and raw water transfer infrastructure and their socio-economic status. This includes quantifiable information related to the population such as age, income, skills and employment and data on housing, businesses, education and healthcare. This information will be used to form an understanding of the current situation, the likely ability of communities to respond to changes resulting from the construction and operation of the Project and establish the potential significance of effects.

Raw water transfers construction impacts and mitigation (people and communities)

4.2.16 Construction activities could include enabling works, site clearance, vegetation removal, the setting up and use of compounds and laydown areas, construction of structures and buildings, excavations and earthworks, and the installation of

pipelines. Many of the potential impacts from the installation of pipelines would be of short duration, occurring for days or weeks, as the different activities such as vegetation clearance, topsoil strip, excavation, pipelaying and restoration each progress along the pipeline routes. There may be periods of inactivity as these different working groups progress at different times and rates. Impacts of longer duration (months or years) may occur from the use of construction compounds and at the abstraction and pumping station sites.

4.2.17 Construction activities could result in potential temporary visual effects and a change in view for visual receptors such as residential properties, farmsteads and users of the local PRoW and road network. This includes visual receptors located around the new pumping stations and abstraction infrastructure. Due to the transient and limited nature of construction required to install the pipeline and quick reinstatement of trench excavations, any visual effect would be temporary until the works are completed.

4.2.18 The noise and movement generated during construction may result in a reduction in tranquillity. Lighting from construction-related activity, including vehicle lights, may have temporary adverse impacts on the night-time environment of nearby residents.

4.2.19 Visual amenity considerations will inform the process for developing construction methods and components, such as those relating to:

- site lighting
- hoarding, fences and screening
- construction access routes
- tree and vegetation removal, retention, and protections
- handling and storage of soils
- siting of compounds.

4.2.20 The machinery used for various construction activities including the construction of structures and buildings, excavation, earthworks, and installation of pipelines could result in increased noise and vibration levels causing potential disruption for receptors in the area local to the proposed raw water transfer infrastructure. Particularly noisy construction activities are likely to include sheet piling at the Ouse Washes site and potentially at other sites if cofferdams were to be required. Other forms of piling may also be necessary for the foundations of buildings such as pumping stations. Some forms of piling can also lead to vibration impacts, however, these would be experienced over a much smaller area than noise impacts.

4.2.21 Key activities, such as use of trenchless crossing compounds, some highways works and concrete pours, may need to be undertaken outside core daytime working hours, indicating the potential for evening, weekend and night-time impacts. Works outside core daytime working hours would be subject to more stringent noise thresholds, and additional mitigation would be included as appropriate. The ongoing environmental impact assessment will include noise and vibration prediction.

4.2.22 Construction activities would be undertaken in accordance with the relevant codes of practice for noise and vibration control in construction and open sites and

applying best practicable means to reduce any noise or vibration impacts. We will work with the Environmental Health Officers at the local planning authorities in the area to develop construction noise and vibration mitigation measures. An example of a mitigation approach is the three-step construction noise mitigation process which Anglian Water has used successfully on other projects:

- Step 1 – installation of a work site barrier such as perimeter hoarding.
- Step 2 – localised barriers or enclosures designed to target individual noise sources.
- Step 3 – selection of quieter plant.

4.2.23 Construction of intake structures and pumping stations and installation of pipelines including excavation and earthworks, could result in adverse air quality and amenity impacts for relevant sensitive receptors in proximity to construction activities. These impacts would be as a result of the creation of dust and particulate matter. Receptors could include both sensitive human receptors such as residential properties, and sensitive ecological sites.

4.2.24 The Institute of Air Quality Management (IAQM) Guidance on the assessment of dust from demolition and construction (IAQM, 2024) indicates that exhaust emissions from on-site plant (non-road mobile machinery) are usually unlikely to make a significant impact on local air quality. Exhaust emissions from construction plant and non-road mobile machinery for transfers and associated water infrastructure will, however, be assessed qualitatively as part of the EIA.

4.2.25 Good practice mitigation measures to avoid and reduce adverse air quality impacts, such as monitoring and managing dust and selecting 'low emission' equipment would be included in the relevant management plans controlling the construction activities and implemented during the construction phase.

4.2.26 Construction activities within agricultural land parcels could lead to a reduction in the scale or nature of land use or enterprise leading to a discontinuation of the existing land use, including agricultural activities. Land parcels that fall within the Indicative Project Boundary have been identified and relevant engagement is ongoing with affected landowners. Specific impacts that could make agricultural activity less viable include loss of farm holdings, farm buildings, infrastructure or disruption to access to a land parcel. Most impacts associated with the raw water transfers would be temporary, and agricultural land would be reinstated. However, depending on the duration of construction activities, temporary impacts may result in permanent effects on certain farm enterprises if they are removed from agricultural activity for such a long period that it is not viable for them to recommence, post-construction activities. Measures to avoid or reduce adverse impacts would be considered as the development of the proposals progresses, including locating Project components near field boundaries where practicable, and by considering the suitability of the remaining portion of land for continued agricultural use. Where severance of land parcels is unavoidable, alternative access routes would be sought. Financial compensation is not considered in the environmental assessment, but is part of the statutory regime for the acquisition of land rights and forms part of the ongoing negotiation with affected parties.

4.2.27 Construction activities such as pipeline construction may result in temporary disturbance or closure of land open to the public and the local PRoW, bridleway and cycle network. The transfer routes would intersect with PRoWs and navigable waterways which would need to be managed during construction to minimise disruption to their users. Mitigation measures to avoid or reduce these adverse impacts include communication with local communities and relevant stakeholders on planned closures or diversions of access routes and provision of reasonable alternatives.

4.2.28 Construction activities for the transfers are expected to have only limited socio-economic effects due to their relatively small scale and short duration. Some modest benefits may arise from local contracting opportunities and spending by the workforce in nearby communities, but these are anticipated to be temporary and not a significant driver of long-term economic change.

4.2.29 Any short-term increase in workforce numbers could lead to a small rise in demand for local accommodation and services, though this is expected to be manageable within existing community capacity. Engagement with local stakeholders, including businesses, service providers and residents, would be maintained throughout the construction period to ensure that any issues arising are identified and addressed in a timely and appropriate way.

4.2.30 The above identified temporary impacts on people and communities such as visual amenity (including lighting), tranquillity, dust and vehicle emissions and noise all have the potential to impact on physical and mental health and wellbeing, especially for individuals who may be exposed to a combination of these impacts regularly. However, the proposed routing of water transfer infrastructure has been selected to avoid close proximity to the larger settlements where practicable, so the number of residents who may be affected overall is likely to be relatively low. Furthermore, the nature of the linear works would mean that impacts in any given location along the route would be time limited (as construction works progress along the route), again reducing the potential scale of any health impact from the water transfer infrastructure. For walkers, cyclists and horse riders who may be affected by traffic impacts or changes to PRoW, the health impacts are likely to relate to temporary impacts on quality of life, such as from occasional frustration and inconvenience when encountering routes affected by the construction activities. Effective construction planning, signage and communication as outlined above, would help mitigate impacts on community wellbeing.

Raw water transfers construction traffic impacts and mitigation (people and communities)

4.2.31 Construction traffic associated with the raw water infrastructure would be transient on B-roads and minor roads with construction activities moving along the transfer pipeline. Therefore, it is expected that construction traffic impacts would be focused around the area of works being undertaken, which is expected to be phased along the transfer pipeline routes. A change in traffic volumes as a result of construction traffic could have an impact on existing users of the highway network. Walkers, cyclists and horse riders could potentially experience adverse effects due to severance (separation of people from goods, services, and each other by busy roads or other transport infrastructure), and impacts on amenity (pleasantness of a

journey), road safety (rate of collisions), or fear and intimidation (caused by moving objects) due to increased traffic on the local highway network. Other users of the local highway network could experience adverse effects on delay and road safety. The public transport network immediately surrounding the Project may also be affected.

4.2.32 The locations where these effects may be experienced and the scale of impact will be identified as part of the EIA process, as outlined in Chapter 3. Measures to manage and mitigate effects from construction HGV and light vehicle movements are anticipated to include the preparation of relevant construction traffic management plans. These plans would include details of measures to control (e.g. routing and timing restrictions), monitor and enforce construction traffic movements. These plans would also describe the mechanisms for managing the design of accesses and off-site highway works to mitigate traffic impacts, where necessary. For example, several minor roads would be used to reach construction areas and appropriate highway mitigation works may be required to upgrade the roads to include passing bays and widening on bends to improve two-way traffic flow.

4.2.33 Construction traffic, both on site and on the local road network, in addition to the above construction activities, would affect visual receptors including residents and those using local road and PRoW networks.

4.2.34 The use of HGVs and workers' vehicles during the construction of the proposed raw water transfer infrastructure may result in increased noise levels, causing noise impacts at receptors near to construction transportation routes. Although vehicle movements are not considered to generate substantial vibration, particularly on well maintained, even surfaces, there is the potential for vibration impacts at receptors very near to construction transportation routes. The level of impact would be influenced by the existing traffic flow and the change experienced as a result of construction traffic. Greater noise impacts would be more likely for receptors near to roads where existing traffic flows are relatively low and construction transportation movements could result in a greater increase in traffic noise compared to busier roads such as A-roads. Measures to reduce construction transportation noise and vibration impacts would be considered as the development of the proposals progresses, including, where practicable, the routing of HGVs to avoid receptors, splitting construction traffic between multiple routes and the timing of construction traffic movements to avoid the more sensitive times of the day and week. The ongoing EIA will consider the potential for noise and vibration impacts.

4.2.35 Exhaust emissions from construction traffic may result in adverse air quality impacts at relevant sensitive receptors near to 'affected roads', i.e. roads expected to see an increase in traffic due to the Project. These receptors could include both sensitive human receptors such as residential properties, and sensitive ecological sites. Good practice mitigation measures to avoid and reduce adverse air quality impacts would be to split construction traffic between multiple routes and to specify emissions standards to be met by construction vehicles where practicable.

4.2.36 During construction of the raw water transfer infrastructure, residents may experience some temporary disruption from road or PRoW closures and diversions.

Construction traffic and related activities could also reduce ease of access to certain community and amenity spaces in the short term.

4.2.37 These impacts are expected to be temporary and manageable, with access restored once works are complete. Mitigation measures would focus on maintaining clear and timely communication with local communities and stakeholders about any planned closures or diversions, so that residents are able to plan accordingly.

4.2.38 The above identified impacts on people and communities may give rise to a variety of health impacts. These could include impacts on physical, mental and social health and wellbeing. For example, the construction traffic impacts on walkers, cyclists and horse riders such as changes to the existing levels of severance, amenity, road safety, and fear and intimidation, may contribute to indirect health effects associated with reduced physical activity, should these groups be discouraged from active travel or recreational journeys via the local road network.

Raw water transfers operational impacts and mitigation (people and communities)

4.2.39 The Project would introduce new infrastructure into the landscape to the east of Peterborough near Levitt's Drove, to the west of the Ouse Washes at Welches Dam and to the south of Bluntisham. The presence of the new pumping stations, abstraction points and associated fencing, access roads, traffic and lighting would potentially result in a change in view for residential properties, farmsteads and users of the local PRoW and road network located within the vicinity of the new infrastructure. The new infrastructure would potentially affect views from dispersed properties, farmsteads, and PRoWs to the east of Peterborough from Whittlesey and along North Side, North Bank and Levitt's Drove; to the west of the Ouse Washes at Welches Dam, Purls Bridge and Manea; and from Bluntisham's southern settlement edge and from PRoWs to the north-west of the River Great Ouse. Planting and careful design of new buildings and structures would help mitigate these impacts. Proposals for access and lighting would be developed to include measures to minimise impacts on night-time views.

4.2.40 The pipeline corridor comprises works which, when operational, would be underground. Any permanent above-ground installations associated with the pipeline would be limited in size. Once the construction activities are complete, the pipeline corridor would be reinstated to include the replanting of areas of vegetation removed (where possible in relation to easements and accesses) and reseeding of grassland areas disturbed. Depending on the existing land use, reinstatement of soft landscape areas could take time to establish and recover from the works, therefore small changes to views may potentially be noticeable within the immediate area of the pipeline corridor for the initial years of operation. Mitigation such as planting would be proposed where appropriate, to reduce the visual impact of above-ground features such as new valves.

4.2.41 Potential operational noise impacts are likely to be focused on fixed mechanical plant installations such as those at the abstraction and pumping station sites. These industrial noise sources would be required to work on a 24-hour basis, and have the potential to result in increased noise levels at nearby receptors. The ongoing environmental impact assessment will include noise and vibration prediction.

4.2.42 As the design of the associated water infrastructure sites continues to evolve, opportunities to reduce noise levels would be sought, and noise control measures implemented as required. The types of example mitigation measures that will be considered include:

- selection of quieter plant, and/or plant that does not exhibit tonality – noise emissions would be considered in supplier/purchasing decisions
- acoustic enclosures/hoods for mechanical plant such as pump motors
- enhanced acoustic performance of buildings, such as selection of materials with high sound reduction indices, such as acoustic louvres
- installation of absorptive materials inside the proposed buildings that would reduce internal noise levels within the building, and in turn, lead to less noise being emitted from the building to ultimately lower noise levels at receptors.

4.2.43 No significant operational vibration effects are anticipated as all plant capable of generating vibration would be mounted with suitable isolation to prevent vibration being transmitted to the ground and impacting nearby receptors.

4.2.44 Operation of the proposed raw water abstractions and transfers infrastructure is not anticipated to generate a substantial level of traffic, and noise and vibration impacts are considered likely to be minimal.

4.2.45 During the operational phase, significant emissions to air from raw water transfer infrastructure are not anticipated. However, pumping stations may have backup generators and the potential for these to have adverse effects to air quality will be assessed as part of the EIA and appropriate mitigation considered.

4.2.46 Only light vehicles (cars or vans) associated with staff movements for routine maintenance are anticipated during the operational phase. Occasionally a larger volume of traffic, including HGVs, may be necessary, for example non-routine maintenance such as the replacement of equipment. However, these would be short-term in nature and are expected to be isolated to a small number of locations at any given time, spread over the lifetime of the operational phase. As a result, significant transport-related effects are not anticipated during operation of the raw water transfers.

4.2.47 Impacts on farm holdings associated with raw water transfers would occur during the construction phase and no activities during the operational phase are likely to lead to impacts on agriculture, as once the pipeline is installed, areas of agricultural land would be reinstated to their previous use. There may be restrictions on the use of land above the pipeline to ensure pipelines are not damaged and can be accessed for maintenance if required. Maintenance access requirements for pipelines are currently under development.

4.2.48 Operational effects from the Project as a whole, including the raw water transfers, are likely to have predominantly beneficial impacts on employment and access to amenities, such as increased employment opportunities and potential improvements to pathways and walkways, connecting local residents and visitors to community facilities. To address any potential adverse impacts, a socio-economic strategy is currently being developed for the Project as a whole and will consider how local employment and skills, and support for cultural infrastructure, can be enabled. This may include initiatives for education and training. Further

information on the development of this strategy is included in the Design Refinement Report (Anglian Water and Cambridge Water, 2025b).

4.2.49 In terms of health impacts, assuming sensitive landscaping, low noise or well noise-insulated plant, along with other types of mitigation identified above, it is not expected the majority of people would be conscious of, or adversely affected by the raw water infrastructure once constructed, and when any mitigation is well established. The health benefit from the provision of a safe and resilient water supply to communities across the region is likely to be the main health impact.

Raw water transfers: the natural environment

Context

4.2.50 The proposed abstraction locations at both the River Nene and its Counter Drain and the Ouse Washes (River Delph) are covered by multiple statutory nature conservation designations (see Figure 1-2). Both the Ouse Washes and Nene Washes are designated as Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs), Ramsar sites and Special Protection Areas (SPAs) due to their importance for wintering and breeding waterbirds, wetland habitats, notable plant and invertebrate assemblages plus the presence of spined loach (a fish) (*Cobitis taenia*). There is an RSPB reserve and a Wildlife Trust reserve (Bedfordshire, Cambridgeshire and Northamptonshire) within the Ouse Washes and the Nene Washes. These are non-statutory designated sites and are located within the Indicative Project Boundary, apart from Stanground Wash Wildlife Trust reserve which is immediately adjacent. Swan and Goose Functionally Linked Habitat associated with the Ouse Washes SPA and Ramsar falls partly within the Indicative Project Boundary for the raw water transfer routes. The majority of the Indicative Project Boundary for the raw water transfer routes lies within potential spined loach Functionally Linked Watercourse Habitat within a 5km buffer associated with the Ouse Washes SAC.

4.2.51 The Middle Level system, which would be used to transfer water from the River Nene towards the reservoir, includes drains that extend to and which are located immediately adjacent to Woodwalton Fen National Nature Reserve, Ramsar and SSSI, Fenland SAC and Ring's End Local Nature Reserve. Part of the Middle Level system is also located within Swan and Goose Functionally Linked Habitat associated with the Nene Washes SPA and Ramsar, and potential spined loach Functionally Linked Watercourse Habitat within a 5km buffer associated with the Nene Washes SAC.

4.2.52 The proposed raw water transfer infrastructure is located more than 2km from The Wash SSSI, Ramsar and SPA, and The Wash and North Norfolk Coast SAC. These designated sites are located within The Wash Inner and the Great Ouse operational water catchments.

4.2.53 The proposed infrastructure for the raw water transfer from the Ouse Washes (River Delph) to the reservoir is located within the Forty Foot Drain (East) County Wildlife Site (CWS) and immediately adjacent to Sutton and Mepal Pumping Station Drains CWS. The transfer from the River Great Ouse at Earith to the reservoir crosses Pidley Fen Drains CWS, Sutton and Mepal Pumping Station Drains CWS and Ouse Fen RSPB Reserve, and the abstraction point is located within River Great

Ouse CWS. Other non-statutory designated sites are located within 250m of the Indicative Project Boundary.

4.2.54 Lowland fen irreplaceable habitat is shown to be present (based on desk study data) where the Indicative Project Boundary intersects with Ouse Washes SPA, Ramsar and SSSI. The presence of this habitat requires ground-truthing as part of the field surveys currently being undertaken across the Project.

4.2.55 Habitats of principal importance (coastal and floodplain grazing marsh, deciduous woodland and good quality semi-improved grassland) are found within the designated sites listed above. The Indicative Project Boundary also intersects with traditional orchard south-west of Bluntisham. The rest of the Indicative Project Boundary is dominated by arable land with extensive ditch networks.

4.2.56 The catchments are known to provide suitable supporting habitat for spined loach, with records confirming their presence in the River Delph, Counter Drain, Sixteen Foot Drain and Cranbrook Drain. Other notable fish species recorded in the study area include European eel (*Anguilla anguilla*), bullhead (*Cottus gobio*) and brown trout (*Salmo trutta*).

4.2.57 Great crested newt (*Triturus cristatus*) and otter (*Lutra lutra*) are known to use water bodies within the Indicative Project Boundary. In the wider arable landscape, badger (*Meles meles*) and brown hare (*Lepus europaeus*) are present as well as water vole (*Arvicola amphibius*) in the extensive ditch network. A number of bat species are located in the buildings and trees in this landscape. A wide range of bird species associated with the farmed landscape in this part of the Fens are present including barn owl (*Tyto alba*), skylark (*Alauda arvensis*) and corn bunting (*Emberiza calandra*).

4.2.58 The raw water transfer infrastructure crosses the following surface water catchments: Nene (Islip to tidal), Counter Drain (Nene), Middle Level, River Great Ouse (Roxton to Earith) and Old Bedford River/River Delph (including The Hundred Foot Washes).

4.2.59 The River Nene flows eastwards through Peterborough to the Dog-in-a-Doublet sluice, which marks the tidal limit of the river before it ultimately drains to the North Sea beyond Wisbech. Approximately 7.4km upstream of this sluice, the River Nene diverges, with the southern tributary forming the Back River. The Back River flows approximately 1.1km to Stanground Sluice, after which it is known as Morton's Leam. The River Nene and Morton's Leam form the northern and southern boundaries, respectively, of the Nene Washes. Upstream of Stanground Sluice is Stanground Lock, which provides navigational access into the Middle Level system via King's Dyke.

4.2.60 The Counter Drain (Nene) starts south-east of Peterborough and flows generally eastwards, parallel to, and approximately 50m to the north of the River Nene. Flag Fen water recycling centre discharges into the Counter Drain (Nene). The Counter Drain (Nene) flows into the tidal River Nene approximately 250m downstream of the Dog-in-a-Doublet sluice.

4.2.61 The River Great Ouse flows in a north-easterly direction from Bedford towards Earith, where flows are conveyed to the North Sea via three main routes:

- south-eastwards via Hermitage Lock to the Old West River/Ely Ouse
- north-eastwards via Earith Sluice to the Old Bedford River/River Delph
- north-eastwards via the New Bedford River/Hundred Foot River (tidal limit of the Great Ouse).

4.2.62 The Ouse Washes is a complex, level-controlled system, which receives flows from the River Delph to the north, and the New Bedford River to the south. The Ouse Washes (River Delph) is 33km long and approximately 1.1km wide at the widest point. Flows out of the Ouse Washes from the River Delph are predominantly controlled by Welmore Lake Sluice, at the downstream end of the Ouse Washes.

4.2.63 The geology across the sources of supply and raw water transfer infrastructure consists mainly of silts and clays deposits (including two Secondary A aquifers – that is a permeable geological layer capable of supplying water to support smaller local water supplies and provide flow to rivers) overlying clay formations. These clay formations sit above the Blisworth Limestone Formation Principal aquifer (geological formations which can supply significant amounts of water for abstraction as well as supporting river flows and wetlands) and two other Secondary A aquifer strata. Impacts from potential sterilisation of minerals or mineral safeguarding areas that could be worked in the future are discussed in Section 7.4.

4.2.64 Both the superficial and bedrock geologies within the area are known to be saturated where the water table lies at or only a few metres below ground level all year round. The flow of groundwater is anticipated to be slow and controlled mainly by the man-made Internal Drainage Board (IDB) drains built across the fenland. Groundwater is directed via the IDB drains into channels to lower groundwater levels and prevent the fenland flooding under wet climate conditions. The saturated condition of the ground produces anaerobic (oxygen-free) conditions within the drift which has enabled the preservation of organic matter, producing peat, which in some places, retains archaeological features and artefacts.

4.2.65 The raw water transfer infrastructure crosses areas of land located within Flood Zones 2 and 3 in multiple locations. This raw water infrastructure is required in locations close to the river abstraction on the River Delph, River Nene and Middle Level, given the need to transfer water from these rivers to the reservoir. The Ouse Washes, Nene Washes, and thousands of kilometres of flood defence embankment manage and reduce the risk of flooding from the main rivers and the Middle Level channels. These flood risk management measures are supported by a combination of land drainage pumps, flood gates and other flood risk management infrastructure. The key types of receptors that could potentially be at risk from flooding include people, properties, agricultural land (including Grade 1 agricultural land), and environmentally sensitive sites such as SSSIs, SPAs, SACs and Ramsar sites.

4.2.66 The majority of the raw water transfers area is ‘unclassified’ by the British Geological Survey (BGS) Groundwater Flooding Susceptibility (BGS, 2010). However, there are localised areas which are classified as having the ‘Potential for Groundwater Flooding to Occur at the Surface’ within and surrounding the

Indicative Project Boundary, most notably east of Peterborough adjacent to the River Nene and adjacent to the River Great Ouse at Bluntisham.

4.2.67 National Soil Association mapping (Cranfield University, 2024) reports that soils underlying the sources of supply and raw water transfer infrastructure are clayey soils and variably humose (6-25% organic matter content), or mineral (<6% organic matter content). Agricultural Land Classification (ALC) is a system of assessing farmland quality which classifies land into five grades with 1 being the best and 5 the worst, and grades 1, 2 and 3a being termed 'Best and Most Versatile' (BMV) agricultural land (Natural England, 2012). According to provisional agricultural land classification mapping (Natural England, 2007), the sources of supply and raw water transfers cover mainly Grade 2 (very good) land. There are areas of Grade 1 (excellent) land to the north-east of Chatteris, and a small area of Grade 3 (good to moderate) land near Bluntisham and Horseway.

4.2.68 The area within and surrounding the Indicative Project Boundary for the raw water infrastructure comprises mainly greenfield arable farmlands and some residential development. Eight historical and/or active landfill sites have been recorded within the study area (250m distance from the Indicative Project Boundary).

4.2.69 The identified landfill sites are potential sources of contamination. While risks from these are expected to be largely minimal, completion of a ground investigation and assessment of risks in line with statutory guidance, will further characterise the site condition and quantify the risk.

Raw water transfer construction impacts and mitigation (natural environment)

4.2.70 Construction activities such as vegetation clearance, excavation and earthworks, erection of buildings and installation of pipelines have potential to impact habitats and species. Impacts include habitat loss, degradation and severance, disturbance to terrestrial and aquatic fauna (via noise, vibration, lighting, human presence), and possible killing or injury of terrestrial/aquatic fauna through the removal of occupied resting or breeding sites.

4.2.71 Construction traffic could result in air pollution from vehicle emissions and dust from vehicle movements resulting in enrichment and/or acidification of habitats, leading to possible changes in plant community composition.

4.2.72 To ensure legal compliance with relevant wildlife legislation, appropriate mitigation strategies for legally protected species found to be present, will be developed in consultation with Natural England as the ecology baseline for the Project evolves.

4.2.73 The potential for impacts on the qualifying features and conservation objectives of the Ouse Washes and Nene Washes SACs, SPAs and Ramsar sites, Woodwalton Fen Ramsar and Fenland SAC, The Wash Ramsar and SPA, and The Wash and North Norfolk Coast SAC, will be considered through the HRA. Further information can be found in Appendix B – Our approach to other environmental assessments. The EIA will also assess potential for impacts on additional SSSI features that are not part of the SAC/SPA and Ramsar designations.

4.2.74 Protective measures, as set out in the relevant management plans, would be implemented during construction to minimise direct and indirect impacts (such as air pollution, habitat fragmentation and loss of ecological connectivity) to protected

habitats and species. Direct impacts to designated sites and habitats of principal importance located within and adjacent to the Indicative Project Boundary would be avoided or reduced as far as possible. Trenchless pipeline installation techniques would be used where possible to avoid sensitive areas. Habitat loss as a result of pipeline installation would only be temporary as land would be reinstated once construction is complete. Where possible, reinstatement of hedgerows and trees would use the same or similar species to those removed.

4.2.75 The key types of receptors at risk from flooding include people, properties, agricultural land (including Grade 1 agricultural land), and environmentally sensitive sites such as SSSIs, SPAs, SACs and Ramsar sites including, but not limited to, the Ouse Washes (River Delph) and Nene Washes.

4.2.76 Construction activities such as erecting or altering a temporary structure or excavation near a main river could result in a change to flood risk from watercourses to adjacent land, along with changes to floodplain capacity and flow paths available during floods. Where transfer pipelines would be installed near main rivers, trenchless techniques are to be used to minimise disruption and flood risk impacts. For smaller crossings, good practice would be identified in the relevant management plans and applied to manage flows during construction to ensure working areas are safe and that there is no increase in flood risk to off-site areas.

4.2.77 Mitigation measures for flood risk impacts could involve moving stockpiles to be located away from higher flood risk areas to lower flood risk areas wherever practicable, compensatory storage in gravity-drained areas away from flood defences, diversion of flow paths and conveyance measures in pumped catchments and/or attenuation measures embedded within the proposed design for the Project. Other appropriate measures may include minimising obstruction of flood water, flood flow diversion to suitable locations, flood defence and/or channel improvements, and internal drainage measures. This would include working with other flood risk management activities provided by other organisations, where appropriate.

4.2.78 Surface watercourses such as the Counter Drain (Nene), River Nene, River Great Ouse, Ouse Washes (River Delph), Forty Foot Drain and Middle Level system could be impacted by changes to flow/level, sedimentation deposition, water quality and hydromorphology as a result of construction activities such as installation of intake structures, pumping stations, culverts or bridges. Industry good practice methods and practices would be used to reduce any effects on the watercourses. These may include, but are not limited to, use of silt booms, isolation of construction areas using temporary sheet piling and temporary diversion of watercourses during construction.

4.2.79 The majority of watercourses crossed by raw water pipelines are minor field drainage ditches and would be constructed using an open cut technique. Temporary flumes would be put in place to allow flow around the open cut during construction. Industry standard methods and practices would be used to ensure no significant changes in water quality or sedimentation during the construction. For the larger watercourses, pipeline crossings would be tunnelled beneath the watercourses, reducing the potential for changes in water quality, flow and sediment during construction.

4.2.80 During construction, site runoff from construction compounds and active construction sites, dewatering from excavations, and road runoff from construction haul roads and commissioning flows, would be managed. Drainage would be provided and maintained to control water movement during the works. Where necessary the runoff would be intercepted, attenuated and treated on site to ensure that any discharge into the rivers and channels does not increase flood risk, has a low sediment content and is of suitable water quality. Bunding of excavated soil and material stockpiles would be incorporated to construction site sustainable drainage systems, e.g. settlement and detention basins, ditches, treatment facilities, etc.

4.2.81 Construction activities would include excavation of superficial deposits and bedrock geology and are likely to intercept groundwater levels. Therefore, temporary drainage and dewatering measures would be put in place where required, to provide a dry working environment. Changes in groundwater levels are likely to occur, but due to the presence of clay across the area these changes would remain local. Groundwater levels would be monitored prior to construction and would continue throughout as well as after completion of the construction phase as required. This monitoring would focus on the location of sensitive features which rely on groundwater levels. The monitoring would be used to inform how to mitigate changes in groundwater levels across the construction process, such as returning water to local watercourses to maintain flow, or to ground, to maintain groundwater flow to sensitive archaeological features or wetlands.

4.2.82 Construction activities, in particular, excavation, earthworks and installation of pipelines would lead to temporary or permanent removal of land from agricultural use, including loss of best and most versatile land (agricultural land classification grades 1, 2 and 3a, deemed good to excellent). Construction may lead to an alteration to land drainage, which could lead to flooding or waterlogging of adjacent agricultural land. The use of heavy machinery, inappropriate soil handling and stockpiling may lead to long-term soil compaction and loss of soil structure and quality for agriculture and/or ecosystem services (the benefits that humans receive from the natural environment and healthy ecosystems, such as clean air and water, pollination, and climate regulation). If excavation were to be undertaken without the restoration or re-use of soil, this would lead to loss of soil as a resource and ecosystem service, including support of ecological habitats and biodiversity, support for the landscape, protection of the historic environment and provision of raw materials. Excavation of peat and exposure to oxygen would result in loss of carbon to the atmosphere and inappropriate handling could lead to a deterioration of peat structure and quality. However, mitigation measures would be developed, and included in construction phase management plans to ensure appropriate stripping, handling, storing and placement of soil resources with measures including restricting soil handling during wet periods, use of tracked/low ground pressure vehicles and appropriate segregation of soil types and horizons. As part of reinstatement activities, field drains would be restored as required to ensure appropriate drainage.

4.2.83 Likely geology and land quality impacts during construction include exposure of human health receptors (primarily construction workers) to potentially contaminated arisings. There may also be the creation and migration of dust off

site during the construction works, for example from excavations, soil management and stockpiling. Potential leachates and mobile contaminants are also likely to migrate through preferential pathways which are introduced during construction activities. It is unlikely that landfill sites would pose an unacceptable risk to human health receptors. Overall, while there is a slight possibility to encounter contamination in soils, potential sources of contamination are limited and localised. Within the *in situ* soil, iron ochre is expected to be present within peat and poses the risk of oxidising to acid sulphate if exposed to oxygen during excavation. This could be prevented by ensuring the peat remains waterlogged and relevant measures are included in construction phase management plans.

4.2.84 Mitigation of impacts would be achieved by preventive measures as set out in the relevant management plans. Environmental receptors such as groundwater are not expected to be significantly affected due to the presence of low permeability soils, and the absence of confirmed direct contaminant pathways. No impacts are expected relating to geological resources due to the absence of designated or sensitive geological resources within the area. Impacts from the potential sterilisation of minerals or mineral safeguarding areas that could be worked in the future are discussed in Section 7.4.

Raw water transfers operational impacts and mitigation (natural environment)

4.2.85 The lighting layout and specification at the pumping stations would be designed in accordance with good practice to avoid and reduce disturbance and displacement of fauna sensitive to light spill. Landscape planting would also be used to screen adjacent sensitive areas from operational lighting.

4.2.86 The introduction and/or spread of invasive species through the operation of open channel transfers, abstraction of water from the Middle Level system, Ouse Washes or River Great Ouse, and Counter Drain (Nene) would be avoided by inter-catchment treatment measures embedded in the design.

4.2.87 The abstraction of water from the Ouse Washes is anticipated to reduce the frequency and/or duration of exceedances of the target water levels of the Ouse Washes water level management plan (Environment Agency, 2024). The reduced flooding of the Ouse Washes would bring benefits to breeding waterfowl by reducing the flooding of nests and encouraging more suitable grass swards over time. It is also thought that there would be benefits to other features of the SAC, SPA and Ramsar, although to a lesser degree in the winter than in spring and summer. The difference in water levels is being modelled to quantify the benefits.

4.2.88 Operation of the proposed raw water transfers infrastructure could result in changes in water chemistry, water regime, surface water quality/quantity (including salinity) and changes in ground water quality/quantity. This could have a negative impact on terrestrial and aquatic habitats, flora and fauna and features of designated sites.

4.2.89 The operation of the proposed abstraction infrastructure and raw water transfer pipelines would be designed to ensure that the Project does not increase flood risk to the receiving watercourse or off-site areas and that the Project remains resilient to both current and future flood conditions. A flood risk assessment (FRA) of relevant sources is being undertaken during the design stage to establish flood risk

to and from the Project. Where necessary, appropriate embedded mitigation measures would be incorporated to manage any residual risk. These may include raising key infrastructure above flood levels, integrating sustainable drainage features, ensuring safe access and egress during flood events, and implementing operational controls to manage water flows.

4.2.90 Mitigation measures could involve minimising obstruction of flood water, flood flow diversion to suitable locations, flood defence and/or channel improvements, and internal drainage measures. This would include working in combination with other flood risk management activities provided by other organisations, where appropriate.

4.2.91 The raw water abstractions would lead to a reduction in water level and flow downstream of the abstraction locations. In collaboration with the Environment Agency, modelling has been carried out to set out abstraction rules which would ensure that sufficient water remains in these watercourses to support the environment and other water users. These rules would be set out in the abstraction licence conditions for the Project.

4.2.92 In addition, modelling is being undertaken to ensure that there is no adverse change in sedimentation and salinity in the tidal sections of the downstream watercourses and the salinity in the Wash. If found to be necessary, appropriate embedded mitigation measures would be identified and included within the design.

4.2.93 At each abstraction location a new intake structure would be required. The presence of this structure may have an impact on local hydromorphology of the watercourse. However, the structure would be designed to minimise changes to the structure and water levels in the existing channels.

4.2.94 Water would be transferred from the River Nene into the Middle Level system via the existing channel connection at Stanground Lock. To compensate for water transferred from the River Nene at this location, water would be transferred from the Counter Drain (Nene) into the River Nene upstream of the Dog-in-a-Doublet sluice. If ongoing monitoring and assessment shows that water quality would be affected by this transfer of water, then treatment would be included to ensure no adverse effect on water quality in the River Nene and its associated designated sites.

4.2.95 The presence of pipelines and other infrastructure may impact on groundwater levels. Where risks are identified, mitigation measures would be included. Monitoring would be included where necessary to ensure mitigation is sufficient to minimise any prevailing impacts on levels and flows of groundwater. Mitigation could include gravel material along the pipeline to allow groundwater to flow across the pipeline route. Where needed, clay bunds would be included within these gravel channels to ensure groundwater does not flow along the pipeline route, reducing local groundwater levels.

4.2.96 Impacts on agricultural land and soil would be the result of construction activities. No new impacts are expected as a consequence of operational activities.

4.2.97 The Project would have systems in place to prevent any contamination during operation. Any existing contamination would be managed at construction phase to

negate any risks from existing contamination impacting human health, controlled waters or the environment during operation.

Raw water transfers: landscape and historic environment

Context

4.2.98 The landscape to the east of Peterborough and from the reservoir site to the north of Somersham is generally flat, open, and low-lying fenland with a distinctive fen and 'Fen Isle' topography. The low-lying fen deposits were once a vast wetland formed during periods of sea level rises and falls, as well as waterlogging, through to the 17th century. Large-scale reclamation of the wetlands took place during the post-medieval period transforming the area into an intensively farmed landscape which is sparsely vegetated with few trees and hedgerows. The Forty Foot Drain, Sixteen Foot Drain, Nene Washes and the Ouse Washes are notable landscape features cutting across the fen. The area is a largely unsettled, arable landscape with isolated villages and scattered individual properties.

4.2.99 Around the settlements of Somersham and Colne (see Figure 1-2), a low-lying 'fen margin' landscape forms a transition between the Fens to the north and east and the gently undulating farmland of the central claylands to the south and west. The area is sparsely settled, a mix of arable and pastoral farmland with isolated villages located on higher ground. A matrix of land uses, including farmland, orchard and deciduous woodland, are a key characteristic of the landscape.

4.2.100 To the west of Somersham and Bluntisham, the gently undulating arable farmland of the central claylands has a large-scale field pattern with few hedgerows or hedgerow trees, giving rise to a predominantly open landscape. To the south of Bluntisham, the flat, low-lying, broad shallow valley of the River Great Ouse flows generally west to east. Existing gravel workings, and former workings which have been flooded to create significant areas of open water are notable landscape features.

4.2.101 The farmland within the Fens, central claylands and River Great Ouse valley is relatively tranquil but on main roads, within settlements, business parks and gravel works, the tranquillity is low.

4.2.102 The low-lying fen deposits formed from around c.10,000 BC onwards and have significant potential for preserved organic remains. Evidence for Palaeolithic and Mesolithic activity may survive at depth, buried by fen deposits. Neolithic evidence is sparse but isolated finds, such as stone axeheads, show people were clearing trees. During the Bronze Age, people buried their dead within highly visible monuments, such as the scheduled barrow cemetery at Stanground (see Figure 1-2). Throughout and into the Roman period, there is evidence for people organising the landscape on a large scale such as at Fengate. The Flag Fen trackway, constructed around 1,000 BC, is evidence that the wetlands were important to facilitate communication and movement.

4.2.103 The Romans constructed the Fens Causeway, which runs from Peterborough to Denver in Norfolk. After the Romans left, evidence for activity is scarce; however, Peterborough (known as Medeshamstede) was the site of a 7th century monastery, which became a Benedictine abbey in the medieval period. Other settlements

established at this time include Whittlesey and Thorney. Agriculture, as well as clay extraction, was an economic driver behind the expansion of key settlements like Peterborough.

Raw water transfer construction impacts and mitigation (landscape and historic environment)

4.2.104 Construction activities including enabling works, site clearance, setting up and use of compounds and laydown areas, vegetation removal, excavations and earthworks and construction of haul roads would cause temporary direct loss of landscape features. The construction activities and visual distraction of introduced plant and vehicles, temporary fencing, security fencing, material storage and use of crane machinery would be apparent and would erode the generally rural landscape character and levels of tranquillity within the local landscape.

4.2.105 For the pipelines, changes to the local landscape character would be within the immediate setting only, impacting only areas adjacent to the pipeline corridors. There would be a minor loss of existing landscape features such as existing vegetation within the pipeline corridors. More permanent changes would be from the introduction of the above-ground infrastructure of the pumping stations and abstraction infrastructure located within the Fens and the River Great Ouse valley landscapes.

4.2.106 Construction works, such as excavation for pipeline trenches and foundations for buildings, would likely remove archaeological and palaeoenvironmental remains. This includes possible prehistoric and Roman activity between Chatteris and Somersham. Construction activities could also result in dewatering of surrounding wet and organic deposits, particularly across the fen areas south of Chatteris, and also at the River Great Ouse, where palaeochannels may survive. Dewatering during construction could also impact on organic remains which may survive at the scheduled barrows at Prior's Fen and Bank Farms, near to the proposed abstraction infrastructure at the Dog-in-a-Doublet sluice.

4.2.107 A programme of proportionate archaeological investigation, including geoarchaeological investigations and trial trenching, will inform the understanding of how this landscape has developed and been used over time. Groundwater monitoring continues to inform how changes to the water regime may affect the historic environment. This will inform the design and development of appropriate mitigation which reflects the archaeological importance of what is found, as well as wider landscape priorities.

4.2.108 Significant archaeological remains would be avoided where possible, through careful design, changes to construction methods, and preservation *in situ*, where practicable. Changes to the groundwater regimes would be carefully managed prior to and during construction, to avoid dewatering of organic deposits. Mitigation measures in relation to this are set out within Section 4.2 under the *Raw water transfers: the natural environment* heading. Archaeological remains that cannot be avoided would be mitigated through preservation-by-record measures, such as excavation and monitoring activities.

4.2.109 The construction of the pipelines and presence of the new pumping station and abstraction infrastructure could result in a permanent change to the setting of

heritage assets. This includes the Grade II listed Hale Windmill, Bluntisham Conservation Area, the Grade I listed Parish Church of St Mary, and the Grade II* listed Bluntisham House (see Figure 1-2 showing Grade II* and Grade I listed features). These changes would reduce the agricultural character of the landscape, which positively contributes to the significance of the heritage assets.

4.2.110 Visual amenity considerations, including changes to the setting of heritage assets, will inform the process for developing construction methods and components. Construction activities would be undertaken with reference to the relevant codes of practice and applying good practice measures to reduce detrimental changes to the setting of heritage assets. Landscape planting and careful design of new buildings and structures would help mitigate permanent impacts and would help to integrate the new structures into the landscape.

Raw water transfer operational impacts and mitigation (landscape and historic environment)

4.2.111 The presence and operation of the new pumping stations and abstraction infrastructure, and the associated fencing, access roads, traffic and lighting would result in a direct disturbance and permanent change to the local landscape character of the Fens and River Great Ouse landscapes. Planting and careful design of new buildings and structures would help mitigate these impacts and integrate the new structures into the landscape. Proposals for access and lighting would be developed to include measures to minimise impacts on night-time views.

4.2.112 The pipelines would be underground, and the permanent above-ground installations would be limited in size. Once the construction works are complete, the pipeline corridors would be reinstated and would include the replanting of areas of vegetation removed (where feasible in relation to easements) and reseeding of grassland areas that were disturbed. Mitigation planting would be considered to reduce the impact of above-ground features such as new valves as part of the design process.

4.2.113 Operational effects, such as lighting, have the potential to diminish the contribution of setting to the significance of Bluntisham Conservation Area, the Grade I listed Parish Church of St Mary, and the Grade II* listed Bluntisham House. Planting and careful design of new buildings and structures would help mitigate these impacts and would help to integrate the new structures into the landscape.

5 Main site

5.1 Main site: current proposals

5.1.1 The main site is located approximately 2.2km north of the town of Chatteris, to the east of the A141 and the settlement of Doddington and 4.5km south of March. It includes the reservoir, its associated operational infrastructure, and the surrounding site. The main reservoir site includes the proposed location for the water treatment works. The site surrounding the reservoir and water treatment works includes space for the following:

- operation and maintenance infrastructure
- environmental mitigation
- renewable energy generation and bulk power supply
- access points connecting the main site with local roads
- habitat creation
- recreation facilities
- infrastructure to ensure the reservoir can be easily monitored for reservoir safety.

5.1.2 The proposed reservoir would be formed by engineered embankments to provide a storage capacity of approximately 55Mm^3. This storage capacity would provide a minimum useable volume of 50Mm^3 to meet public water supply requirements, as set out in the WRMPs for Anglian Water (2025) and Cambridge Water (2025).

5.1.3 Figure 1-1 shows the main reservoir and water treatment works locations, the connections to the raw water and treated water transfers and the construction working areas and construction traffic routes. Information on the proposals for the main site including the proposed reservoir and water treatment works is provided in Chapter 5 of the Design Refinement Report (Anglian Water and Cambridge Water, 2025b).

Main site: construction

5.1.4 An overview of the construction phase is included in Section 2.2. Construction activities within the main site are anticipated to include the following:

- establishment and operation of construction compounds
- creation of site access points
- embankment construction
- water treatment works construction.

5.1.5 More detailed information on the construction proposals for the main site is provided in Chapter 8 of the Design Refinement Report (Anglian Water and Cambridge Water, 2025b).

Main site: construction traffic

5.1.6 Throughout the construction phase construction traffic would transport plant, materials and the workforce to and from the site. The current proposals include options for transporting construction material to the main site by road using HGVs

and by rail. Information on the construction traffic proposals is provided in Chapter 7 of the Design Refinement Report (Anglian Water and Cambridge Water, 2025b).

Main site: commissioning, operation and maintenance

5.1.7 It is anticipated that commissioning activities may include testing that equipment has been correctly installed and works as required, producing the anticipated output; and testing of operational and emergency procedures.

5.1.8 The operational phase of the Project would include activities such as operation of the reservoir, water treatment works and other infrastructure, regular inspections and monitoring of structural integrity of the reservoir. The reservoir site would provide recreational facilities and the current working assumption is that the reservoir would be capable of hosting up to 400,000 visitors a year once operational and when the recreational opportunities facilitated by the Project have been fully developed by third parties. The operational phase of the Project is still being defined and further information will be made available at future consultation phases.

5.2 Main site: initial environmental information

5.2.1 Impacts on the environment within and surrounding the reservoir and water treatment works as a result of the construction and operation of the Project are discussed below. The scale of these impacts would depend on the overall duration, frequency and proximity of the activities and features associated with the Project in relation to nearby receptors. The EIA process described in Chapter 3 will assess effects of these impacts on receptors at the next stages in the development of the Project proposals. These assessments will inform the development of the design of the Project and the methodologies for construction, including the identification of mitigation measures to avoid or reduce significant environmental effects. Further information on the approach to mitigation is provided in Section 3.6 and examples of mitigation measures are provided in Appendix A.

Main site: people and communities

Context

5.2.2 The reservoir and water treatment works are to be located between the market town of Chatteris and the village of Doddington, which both fall within the administrative areas of Fenland District Council, and Cambridgeshire County Council. The town of Chatteris is located to the south of the reservoir and water treatment works and the villages of Doddington and Wimblington are located to the west and north respectively (see Figure 1-2).

5.2.3 The land use within and surrounding the Indicative Project Boundary for the reservoir site and water treatment works is generally agricultural fields and the local highway network with several other settlements such as Manea, approximately 4km to the east.

5.2.4 Views from within and around the Indicative Project Boundary would generally be obtained from public highways, PRoWs, navigable waterways, settlements, dispersed properties, farmsteads, and employment areas. Views from private and

public land on the edges of settlements and linear developments along roads such as Doddington Road and Primrose Hill are typically across agricultural land within a fenland landscape. Views from employment areas on the settlement edge at Chatteris and to the east of Wimblington (see Figure 1-2) along the B1093 Manea Road tend to be restricted by large warehouses within the areas and roadside planting. The PRoW network, long distance paths such as the Greenwich Meridian Trail and Hereward Way, navigable waterways such as Counter Drain (Ouse), River Delph, Sixty Foot Drain and Forty Foot Drain, and the road and rail network such as the A141 Isle of Ely Way, A142 Ireton's Way and the Peterborough to Ely railway (see Figure 1-2) also provide views of agricultural land in parts, depending on the degree of road or riverside vegetation.

5.2.5 Many of the receptor assets which are closest to the reservoir fall into the business and residential category, including farms, shops and pubs, some of which may be directly adjacent to the reservoir and water treatment works. Community assets such as town halls, places of worship and community centres also feature within nearby settlements.

5.2.6 The area within and around the Indicative Project Boundary includes a network of PRoWs and amenity spaces that support outdoor recreation and community wellbeing such as parks, playing fields and sports facilities. These assets are integral to local connectivity and leisure, with many located within 500m of the proposed reservoir.

5.2.7 In terms of local health, Chatteris's population scores similarly to the England average in terms of life expectancy and causes of death.

5.2.8 As is typical for rural areas, information from the 2021 Census (Office for National Statistics, 2022) on commuting patterns indicates a high reliance on private vehicles. The data also indicates that walking to work is less common than national and regional averages, suggesting limited active travel infrastructure or accessibility.

5.2.9 The A-roads proposed to be used for HGV construction traffic (refer to Section 7.3 of the Design Refinement Report (Anglian Water and Cambridge Water, 2025b)) already carry substantial traffic volumes, including HGVs. The B-road network and minor roads typically have lower traffic volumes and so would more likely be sensitive to changes in traffic flows where they pass through built up areas.

5.2.10 There are numerous farm businesses with land on the site of the reservoir which consists of predominantly arable holdings. The agricultural land within the Indicative Project Boundary for the reservoir and water treatment works is provisionally mapped as mainly very good quality agricultural land, with some areas of excellent quality agricultural land. Chatteris Airfield and the RSPCA Block Fen Animal Centre are located within the Indicative Project Boundary for the reservoir site. Many residential areas are affected by road traffic noise, notably from the A141 and A142 which are both included in Defra's strategic noise mapping (Defra, 2023b). There is a small Noise Important Area (comprising one property) located on the A141 at Wimblington (see Figure 1-2). Noise Important Areas are 'hotspot' locations for road traffic noise where the population is most likely to experience related health impacts. These areas are prioritised for further investigation and

mitigation measures to reduce noise if appropriate. Higher noise levels would also be expected at locations closer to industrial activity. Agricultural noise sources such as the intermittent sound of tractors, would influence noise levels in the rural areas within and immediately surrounding the reservoir and water treatment works sites.

5.2.11 Baseline noise surveys have been undertaken at locations representative of receptors that may be affected by construction and operational activities at the reservoir and water treatment works sites to understand the existing noise environment. The methodology and locations used for the surveys were agreed in advance with representatives of Fenland District Council and Cambridgeshire County Council. Noise levels were measured continuously for over one week. The data has been processed to present 'typical' noise levels for different times of the day, evening, night and weekend.

5.2.12 Information gathered from desk-based studies to understand the existing air quality environment has determined that no exceedances of the Air Quality Objective for NO_2, PM_{10} and $PM_{2.5}$ were likely at the locations that may be affected by the main reservoir site or water treatment works. Neither site is located within or adjacent to an AQMA. Baseline air quality monitoring is being undertaken, focusing on NO_2 as an indicator of exhaust emissions. Monitoring locations around the main reservoir and water treatment works sites have been chosen to represent areas of sensitive receptors that may be affected by an increase in construction traffic.

5.2.13 As discussed in Section 4.2 under the *Raw water transfers: people and communities* heading, data has been collected to form an understanding of the local communities surrounding the main site and their socio-economic status. This information will be used to assess the likely ability of communities to respond to changes resulting from the construction and operation of the Project, and establish the potential significance of effects.

Main site construction impacts and mitigation (people and communities)

5.2.14 Construction activities at the main reservoir site would include widespread enabling works, site clearance, vegetation removal, the setting up and use of compounds and laydown areas, demolition of buildings, construction of structures and buildings, construction of haul roads to the affected existing road network, movement of plant and construction traffic, excavations and earthworks and the formation of the reservoir. Many of the potential construction phase impacts associated with the main reservoir site would extend over multiple years, and it is anticipated that this could result in significant environmental effects for some receptors. The current understanding of the construction programme is set out in Section 8.2 of the Design Refinement Report (Anglian Water and Cambridge Water, 2025b). The length of the construction period and the potential for impacts to surrounding people and communities is an important element of the development of the Project proposals. The EIA process will identify and evaluate how these effects could vary over the duration of construction, and will seek to avoid and reduce adverse effects by refining the design and through the identification of mitigation measures.

5.2.15 The large-scale construction activities associated with the reservoir, the main site and surrounding habitat and recreational areas would potentially affect views from settlement edges such as Chatteris, Doddington, Wimblington and Manea, and from linear developments along roads such as Horseway, Doddington Road and Primrose Hill. Construction activities would be visible from scattered properties, farmsteads and the local PRoW and local road network within farmland in all directions from the site.

5.2.16 Construction activities for the water treatment works would potentially affect views from Chatteris's north-eastern settlement edge, Doddington's southern settlement edge, Swingbrow, Horseway, and from dispersed properties, farmsteads and the local PRoW and road network within farmland to the north, east and south-east of Chatteris.

5.2.17 Existing vegetation along settlement edges and in the form of windbreaks associated with isolated farmsteads may provide some filtering of views in the summer months. The retention of areas of existing vegetation, where possible, on the site boundary along the A142 Ireton's Way and the A141 Isle of Ely Way could potentially provide some screening for visual receptors in the summer months from Doddington and Chatteris's eastern settlement edges.

5.2.18 The noise, movement and visual intrusion generated during construction activities throughout the main site would result in a loss in tranquillity. Lighting from construction-related activity, including vehicle lights, may have adverse impacts on the night-time environment of residents such as those located near to construction activities. Visual amenity considerations will inform the process for developing construction methods and components. For examples of these considerations, see Section 4.2 under the *Raw water transfers construction impacts and mitigation (people and communities)* heading.

5.2.19 The machinery used for the enabling works, site clearance, vegetation removal, establishment and use of compounds and haul roads, demolition of buildings, excavation, earthworks, and construction of buildings and other structures could result in increased noise and vibration levels, causing potential disruption for receptors in the area local to the reservoir and water treatment works sites. Construction activities that could potentially have higher noise impacts include the bulk earthworks required for the embankment construction and piling for the water treatment works and other building foundations. Some forms of piling and earth compaction works can also lead to vibration impacts, however, these would be experienced over a much smaller area than noise impacts.

5.2.20 Many of the potential noise and vibration impacts from the construction activities at the reservoir and water treatment works sites would vary over the duration of the construction programme. For example, noise levels for residents living near the embankments are likely to be highest when constructing the top levels of embankment nearest them. Noise levels are expected to be lower during the November to February periods when earthworks activities are likely to be reduced from those during the main earthworks seasons. Demolition, site clearance and vegetation removal are examples of activities that may generate higher noise levels in relatively small areas for short periods.

5.2.21 Earthworks activities may extend into the evening during summer months when daylight allows. Some activities such as highways works associated with the site accesses, and concrete pours for the water treatment works, may need to be undertaken outside of daytime hours due to the nature of the works, meaning it is not possible to pause them or they need to be undertaken during less busy periods. There is the potential for evening, weekend and night-time noise impacts. Working hours would be discussed with relevant stakeholders such as the local planning authority. Works outside of core daytime working hours would be subject to more stringent noise thresholds, and additional mitigation would be included as appropriate. The ongoing EIA will include predicting levels of noise and vibration impacts from the Project.

5.2.22 Construction activities would be undertaken in accordance with the relevant codes of practice for noise and vibration control in construction and open sites and applying best practicable means to reduce noise or vibration impacts. We will work with the Environmental Health Officers at the local planning authority to develop construction noise and vibration mitigation measures. Example mitigation measures include use of lower noise and vibration emission plant and machinery, noise barriers, careful positioning of noise and vibration sources away from local people where practicable, and the setting of noise and vibration limits for certain times.

5.2.23 Adverse effects on air quality due to dust and particulate matter-emitting activities from demolition of existing structures, and earthworks and excavation activities, could be experienced by nearby sensitive human receptors and ecological receptors. 'Trackout' impacts (where dust and debris is tracked onto the public highways from construction vehicles), could be experienced by human and ecological receptors at the edge of the roads hosting site entrances and exits.

5.2.24 The IAQM construction dust guidance (IAQM, 2024) advises that exhaust emissions from on-site construction plant and non-road mobile machinery are usually unlikely to make a significant impact on local air quality in the vast majority of cases. However, due to the size and scale of the Project, exhaust emissions from non-road mobile machinery for the main reservoir site will be assessed via dispersion modelling.

5.2.25 Good practice mitigation measures to avoid and reduce adverse air quality impacts would be included in the relevant management plans and implemented during the construction phase. These measures include monitoring and managing dust through methods such as suppression and selecting 'low emission' machinery and HGVs.

5.2.26 Construction activities are likely to lead to the discontinuation of most farm enterprises and businesses at the location of the reservoir site or a reduction in the scale of agricultural activity. Land parcels that fall within the Indicative Project Boundary have been identified and relevant engagement is ongoing with affected landowners. Specific impacts that make agricultural activity less viable include loss of farm holdings, farm buildings, infrastructure or disruption to access to a land parcel. Loss of farm buildings or structures and disruption to access to land parcels would likely render agricultural activity less viable. For some farm holdings, there may be a reduction in scale of agricultural activity rather than complete

discontinuation. Depending on the duration of construction activities, temporary impacts may result in permanent effects on certain farm enterprises if they are removed from agricultural activity for such a long period that it is not viable for them to recommence post-construction activities. Measures to avoid or reduce adverse impacts would be considered as the development of the proposals progresses, including locating Project components near field boundaries where practicable, and by considering the suitability of the remaining portion for continued agricultural use. Where severance of land parcels is unavoidable, alternative access routes would be sought. Financial compensation is not considered in the EIA but forms part of statutory regime for acquiring land rights and the ongoing negotiation with affected parties.

5.2.27 Construction activities may affect how accessible local amenities are for the population. Examples include works such as the construction of structures and buildings, excavation, earthworks, and the installation of pipelines, utilities, and landscaping. The effects of these activities include direct changes to access to public open spaces and PRoWs, bridleways and cycle networks and temporary impacts through disturbance. Additionally, there may be temporary impacts on amenity spaces not directly caused by the construction itself, but rather by construction traffic resulting from the transportation of materials and equipment. User count surveys and local engagement will be undertaken for affected open space/ recreational spaces and sports facilities to identify temporary loss of accessible public space during construction. If impacts are identified, mitigation measures would be proposed, where necessary, to ensure community wellbeing.

5.2.28 Construction activities such as site clearance, set up and use of compounds, building demolition, vegetation removal, excavation and earthworks may disrupt or displace residential properties and businesses. These activities can also generate beneficial impacts through direct and indirect employment and Gross Value Added by increasing local spending and creating demand for businesses. These activities would provide subsequent opportunities for the potential upskilling of local residents through training and apprenticeship programmes, and increased access to high quality jobs. Additionally, construction workers may alter the demand and availability of accommodation and community facilities, thereby impacting local residents. The presence of a construction workforce can change the size and character of the local population, potentially leading to temporary demographic shifts. If the population temporarily increases due to the construction workers, a corresponding rise in demand for accommodation, services, and local facilities can also emerge.

5.2.29 The combination of visual impacts, traffic impacts, noise, vibration, and potentially dust may also combine to affect local amenity and quality of life. This is likely to be an ongoing annoyance to some local residents, and some may be more sensitive to adverse wellbeing outcomes depending on their individual circumstances, social support networks and capacity to adapt. The human health assessment will also take account of the strength of scientific evidence in terms of associated mental and physical health outcomes being associated with the types of noise, air and other environmental impacts to which communities may be exposed during construction.

5.2.30 Furthermore, some people may potentially experience loss of wellbeing due to being concerned about the process of change itself. People may be worried about the timescales over which construction disruption may last. They may also be concerned about construction workers moving to the area and changes that this may mean in terms of their communities and social cohesion. It can sometimes be the case that community concern before construction begins may be greater than concerns and inconvenience actually experienced once construction is underway. As part of the human health assessment, it is planned to use feedback from public consultation to understand community concerns and to inform mitigation in the form of effective ongoing community liaison to provide information and help address concerns.

5.2.31 The construction of a large scale development such as the Project is likely to impact on people's sense of control, particularly for those affected by land acquisition and compulsory purchase. Feeling in control is a protective factor for mental health. Other protective factors for mental health are resilience and community assets, and participation and inclusion. These factors have potential to be affected by land-take and access impacts on community assets, as well as in terms of how the communities are engaged and consulted through the planning and development of the proposals. Impacts on inclusion may arise during construction, for example, should construction workers from elsewhere be temporarily located locally. These potential impacts will be considered as part of the development of the strategy for construction workers' accommodation. If engagement with, and support for affected people and communities is managed well, risks to mental health can be mitigated. The human health assessment is adopting some principles of mental wellbeing impact assessment to understand how communities are being affected so the information can be reported in the ES. However, many of these impacts can occur in the pre-application stage, prior to the decision on the development being made and outside the scope of the EIA which assesses construction and operational impacts only.

Main site construction traffic impacts and mitigation (people and communities)

5.2.32 As described above for the potential impacts associated with construction activities, because of the length of the construction programme, the construction traffic impacts could extend over multiple years. The EIA process will identify and evaluate the effects during a peak period of the construction phase, and will seek to avoid and reduce adverse effects by refining the design and through the identification of mitigation measures.

5.2.33 It is anticipated that movement of construction materials would use either the strategic trunk road network or the proposed rail sidings before using A-roads such as the A141 between March and the A1/A14. Construction traffic HGVs would be restricted to A-roads where possible, whereas staff light vehicles are anticipated to follow the driver's preferred route based on their origin, levels of congestion on the day of travel and familiarity with the road network. The locations where effects may be experienced and the scale of impact will be determined as part of the EIA process, as outlined in Chapter 3.

5.2.34 A change in traffic volumes as a result of construction traffic would have an impact on existing users of the highway network. Non-motorised users such as walkers,

cyclists and horse riders could experience adverse effects on the environmental impact categories of severance (separation of people from goods, services, and each other by busy roads or other transport infrastructure), amenity (pleasantness of a journey), road safety (rate of collisions), or fear and intimidation (caused by moving objects) due to increased traffic on the local highway network. Other users of the local highway network could experience adverse effects on delay and road safety. The public transport network immediately surrounding the Project may also be affected.

5.2.35 Measures to manage and mitigate effects from construction HGV and light vehicle movements are anticipated to include the preparation of construction traffic management plans, which would include details of measures to control (e.g. routing and timing restrictions), monitor and enforce construction traffic movements. These plans would also provide details of the mechanisms for managing the design of accesses and off-site highway works to mitigate traffic impacts, where necessary. For example, several minor roads would be used to reach construction areas and appropriate highway mitigation works may include passing bays and widening on bends to improve two-way traffic flow.

5.2.36 Construction traffic, both on-site and on the local road network, in addition to the above construction activities would likely affect visual receptors including residents and those using local road and PRoW networks.

5.2.37 The construction routes between the reservoir site and the proposed rail transport options at Whitemoor Yard in March or the new sidings between Stonea and Manea, would introduce construction traffic within the rural landscape to the east of March and Wimblington. The noise and movement generated during construction could result in a reduction in tranquillity.

5.2.38 The use of HGVs and workers' vehicles and, potentially, rail transport during the construction of the proposed reservoir and water treatment works could result in increased noise levels, causing noise impacts at receptors near to construction transportation routes. Although vehicle movements are not considered to generate substantial vibration, particularly on well maintained, even surfaces, there is the potential for vibration impacts at receptors very near to construction transportation routes. Greater noise impacts are more likely for receptors near to roads or railway lines where baseline vehicle flow is relatively low and construction transportation movements could result in a greater increase in traffic noise, compared to busier routes such as A-roads. Measures to reduce construction transport noise and vibration impacts would be considered as the development of the proposals progresses. Where practicable, these would include the routing of HGVs to avoid receptors, splitting construction traffic between multiple routes and timing construction traffic movements to avoid the more sensitive times of the day and week. The ongoing EIA will include noise and vibration prediction.

5.2.39 Exhaust emissions from construction traffic may result in adverse air quality impacts at relevant sensitive human and ecological receptors near to 'affected roads'. It is anticipated that HGV movements to the reservoir and water treatment works would be restricted to A-roads, however, transport routes are still in development. Construction phase transport of materials via rail may have adverse air quality effects in locations close to stationary locomotives where diesel fuels are

used, and along the relevant rail routes. Exhaust emissions from construction transport of materials and workers will be assessed including use of both road and rail.

5.2.40 Residents may be subject to road and PRoW closures, or diversions, during the construction of the reservoir, water treatment works and other infrastructure within the main site. The proposals currently in development include new access tracks and highway improvements to reduce vehicle and pedestrian access disruptions. Construction activities such as traffic movements may reduce access to existing amenity spaces, however, the permanent changes to these connectivity links would ultimately improve accessibility. Proposed mitigation measures include regular communication with local communities and relevant stakeholders regarding planned closures and diversions. Additional mitigation strategies could include ongoing engagement with community groups, making improvements to existing and new PRoWs and cycling routes, and potentially the provision of new amenity spaces.

5.2.41 The above identified potential impacts on people and communities may give rise to a variety of health impacts. These could include impacts on physical, mental and social health and wellbeing. For example, the construction traffic impacts on walkers, cyclists and horse riders such as changes in severance, amenity, road safety, and fear and intimidation, may contribute to indirect health effects associated with reduced physical activity, should these groups be discouraged from active travel or recreational journeys via the local road network.

Main site operational impacts and mitigation (people and communities)

5.2.42 The new reservoir would introduce a new landform into the flat fenland landscape to the north-east of Chatteris. The reservoir embankments and landmark feature on the central peninsula would be prominent in views from settlement edges such as Chatteris, Doddington, Wimblington and Manea, from linear developments along roads, such as Horseway, Doddington Road and Primrose Hill; and from dispersed properties, farmsteads and the local PRoW and local road network within farmland in all directions from the site. The reservoir embankments and landmark features are likely to form a new skyline in many locations, screening existing, more distant views.

5.2.43 In the flat fenland landscape setting, the presence of intervening built elements and vegetation may provide some filtering views of the reservoir embankments. Planting, habitat creation and careful design of new buildings and structures would help mitigate these visual impacts. Proposals for access and lighting would be developed to include measures to minimise impacts on night-time views. Mitigation planting on the reservoir embankment slopes, and within adjacent areas of green infrastructure and habitat creation would help to break up the visual mass of the reservoir, partly filter views and strengthen the tree cover pattern associated with the 'Fen Isle' settlement edges. The new tree planting, habitat creation, green infrastructure and recreational opportunities would provide views of a range of new landscape features within the landscape.

5.2.44 The Project would introduce new infrastructure into the landscape to the north-east of Chatteris. The presence of the new water treatment works and associated

fencing and access roads would potentially affect views from Chatteris's north-eastern settlement edge, Doddington's southern settlement edge, Swingbrow, Horseway, and from dispersed properties, farmsteads and the local PRoW and road network within farmland to the north, east and south-east of Chatteris. Existing trees along the A142 Ireton's Way would provide some screening of views from Chatteris's eastern settlement edge for certain sections during the summer months.

5.2.45 Existing vegetation along settlement edges and associated with isolated farmsteads and dispersed properties may provide some filtering of views in the summer months. Planting and careful design of new buildings and structures would help mitigate these impacts. Proposals for access and lighting would be developed to include measures to minimise impacts on night-time views.

5.2.46 Potential operational noise impacts are most likely to arise from fixed mechanical plant installations such as those at the water treatment works and abstraction infrastructure sites. Whilst the noise sources at these locations are anticipated to be enclosed within buildings, there is the potential for some noise to break out and be audible in the outdoor environment. The visitors' centres, substation(s) and renewable energy infrastructure also have the potential to result in operational noise impacts. Some of these noise sources would be required to work on a 24-hour basis where needed for the supply of water, and have the potential to result in increased noise levels at nearby receptors.

5.2.47 Increased road traffic due to visitors and operational staff to the reservoir site could result in increased road traffic noise levels, causing noise impacts at receptors near to operational traffic routes. Greater noise impacts are more likely for receptors near to roads where baseline vehicle flow is relatively low and visitor traffic could result in a greater increase in traffic noise, compared to busier roads such as A-roads. The ongoing environmental impact assessment will include noise and vibration prediction.

5.2.48 As the design of the reservoir and water treatment works sites continues to evolve, opportunities to reduce noise levels will be sought, and noise control measures implemented as required. Established example mitigation measures that will be considered are described in Section 4.2 under the *Raw water transfers operational impacts and mitigation (people and communities)* heading.

5.2.49 No significant operational vibration effects are anticipated as all plant capable of generating vibration would be mounted with suitable isolation to prevent vibration being transmitted to the ground and impacting nearby receptors.

5.2.50 Operational phase exhaust emissions from leisure and maintenance vehicles may have the potential to affect local air quality at nearby human receptors such as residential properties, schools and ecological sites. These impacts will be assessed in the EIA using dispersion modelling to predict pollutant concentrations at receptors, and impacts will be reduced. Both the main reservoir site and water treatment works may have backup generators and the potential for these to have adverse effects to air quality will also be assessed. Potential odour impacts from the water treatment works during the operational phase will be assessed for adverse effects on nearby sensitive residential receptors.

5.2.51 A change in traffic movements from light vehicles associated with the operational and recreational use of the reservoir and water treatment works could also result in other users of the local highway network experiencing adverse effects on delay and road safety. The locations where these effects may be experienced and the scale of impact will be determined as part of the EIA process, as outlined in Section 3. Measures to manage and mitigate effects from operational traffic movements are anticipated to include the preparation of management plans for the operational phase to control traffic impacts where necessary.

5.2.52 The recreational facilities would attract visitors by car, walking, cycling, horse riding and public transport. Staff would travel to the site and deliveries would occur associated with the recreational elements as well as the operation of the reservoir and water treatment works. Non-motorised users of the local highway network such as walkers, cyclists and horse riders could experience adverse effects on the environmental impact categories of severance, amenity, road safety, or fear and intimidation, due to increased traffic on the local highway network.

5.2.53 Impacts on farm enterprises and land holdings would occur during the construction phase and are discussed above.

5.2.54 Once operational, the reservoir would provide new recreational facilities including provision of new open spaces and improved routes for walkers, cyclists and horse riders, resulting in positive effects on public health priorities. Additionally, the new reservoir would require a wide range of new employees to oversee and maintain the reservoir as well as manage recreational facilities on site. Therefore, it is expected that the Project would create employment opportunities.

5.2.55 Once in operation, the Project would secure a resilient supply of drinking water which would benefit communities across the region. Water security is essential to human health. In addition to this wider societal health benefit, there is a likelihood of many health benefits to local communities due to the operation of the Project. As outlined above, the new recreational facilities would be beneficial to health. This may be via increased opportunities for physical activity through walking, cycling and horse riding. It may also be via the access to new green and blue space (i.e. the landscaping together with the water and water-based recreation), which is associated with mental and physical wellbeing benefits. Furthermore, the new employment and economic benefits would be positive to health.

5.2.56 The Project would also introduce a number of potential health impacts which are being considered and addressed through design and mitigation. The forthcoming human health assessment, which forms part of the EIA, will report on various risks, for example potential adverse impacts relating to water safety, traffic and emissions, whilst providing context in terms of likelihood and the measures in place to reduce these impacts. However, at this stage it is expected that on the whole, the beneficial health impacts of operation would outweigh the potential adverse health impacts.

Main site: the natural environment

Context

5.2.57 Swan and Goose Functionally Linked Habitat associated with the Ouse Washes SPA and Ramsar (see Figure 1-2) is located adjacent to the north-eastern and south-eastern sides of the main reservoir site. Potential spined loach Functionally Linked Watercourse Habitat within a 5km buffer associated with the Ouse Washes SAC is located along the eastern edge of the main reservoir site. Part of the Forty Foot Drain (East) CWS and the Wimblington Common Gravel Pits CWS are also located immediately adjacent to the main reservoir site.

5.2.58 The reservoir site and water treatment works are located more than 2km from The Wash SSSI, Ramsar and SPA, and The Wash and North Norfolk Coast SAC. These designated sites are located within The Wash Inner and the Great Ouse operational water catchments.

5.2.59 Habitats of principal importance (arable field margins, reedbed, traditional orchard and native hedgerows) are present within the main reservoir site. The rest of the main reservoir site is dominated by arable land with extensive ditch networks. The Forty Foot Drain crosses the southern part of the site and the Sixteen Foot Drain is present within the eastern boundary.

5.2.60 Lowland fen irreplaceable habitat is shown to be present (based on desk study data) at the existing rail site at Whitemoor Yard in March. The presence of this habitat requires ground-truthing as part of the field surveys currently being undertaken across the Project. Habitats of principal importance (deciduous woodland and no main habitat but additional habitats present) are also present. Whitemoor Marshalling Yard CWS is located within and immediately adjacent to the existing rail site.

5.2.61 Spined loach and three-spined stickleback (*Gasterosteus aculeatus*) have been recorded within the Sixteen Foot and Forty Foot Drains during aquatic invertebrate sampling undertaken in 2024. The majority of the smaller drains do not hold sufficient water to support important fish populations, but may be suitable for three-spined stickleback.

5.2.62 Great crested newt, water vole and otter are known to use the water bodies located within the Indicative Project Boundary and badger and brown hare are present within the arable fields. A number of bat species are located in the buildings and trees in this landscape. Several notable bird species are known to be present including breeding corn bunting, skylark and yellow wagtail (*Motacilla flava*), whilst whooper swans (*Cygnus cygnus*) and other waterfowl use some of the fields for feeding outside of the breeding season.

5.2.63 The reservoir site and water treatment works are located within the Middle Level system. This system is level managed, with water levels controlled by the Middle Level Commissioners via a network of raised managed drains and pumping stations including St Germans Pumping Station and IDB water level management pumps.

5.2.64 In the area immediately surrounding the proposed reservoir site and water treatment works, there are two raised drains: the Forty Foot Drain (which runs east-west separating the reservoir site and the water treatment works site) and the

Sixteen Foot Drain to the east of the reservoir site. At present, across the reservoir and water treatment works sites there is a patchwork of lower-lying drainage channels. At the reservoir site, these channels are controlled by discharges into the Sixteen Foot Drain at Bensons Pumping Station and into the Forty Foot Drain at Curf Pumping Station. In the water treatment works area, levels in drainage channels are controlled by the Nightlayers Pumping Station which discharges to the Forty Foot Drain.

5.2.65 The location of the proposed reservoir is in Flood Zones 2 and 3 in multiple locations, but the proposed location for the water treatment works is fully outside Flood Zones 2 and 3. Flood defences are present extensively along the Sixteen Foot Drain and Forty Foot Drain and reduce the risk of flooding in combination with a series of pumps and other flood risk management infrastructure in the Middle Level system. The key types of receptors at risk from flooding include people, properties, agricultural land (including Grade 1 agricultural land), as well as environmentally sensitive sites such as Woodwalton Fen. The majority of the reservoir site is 'unclassified' by British Geological Survey Groundwater Flooding Susceptibility (BGS, 2010). However, there are localised areas which are classified as having the 'Potential for Groundwater Flooding to Occur at the Surface'.

5.2.66 The superficial geology beneath the reservoir and water treatment works area consists of silts and clays in places, and sands and gravels (classified as Secondary A aquifers) or peat in others. The bedrock geology beneath the reservoir and water treatment works is largely clay. Both the superficial and bedrock geology within the reservoir and water treatment works sites are known to be saturated where the water table lies at or only a few metres below ground level all year round. Impacts from the potential sterilisation of minerals or mineral safeguarding areas that could be worked in the future are discussed in Section 7.4.

5.2.67 The flow of groundwater is anticipated to be slow and controlled mainly by the man-made IDB drains built across the fenland. The IDB manages water levels within the near-surface zone and field drainage channel to minimise local flooding. The saturated condition of the ground produces anaerobic (oxygen-free) conditions within the drift that have enabled the preservation of organic matter, producing peat in places, and in some places retaining archaeological features and artefacts as discussed in Section 5.2 under the *Main site: landscape and historic environment* heading. Impacts from the potential sterilisation of peat resources are discussed in Section 7.4.

5.2.68 National Soil Association mapping (Cranfield University, 2024) shows that soils at the main reservoir site are loamy soils with pockets of peat, and those at the water treatment works site are humose and mineral soils. According to provisional agricultural land classification mapping (Natural England, 2007) the reservoir site covers mainly Grade 2 (very good) land with an area of Grade 1 (excellent) land in the centre of the site. There are small areas of Grade 3 (good to moderate) land to the east near Block Fen Drove and Sixteen Foot Bank. Within the boundary for the water treatment works site, a total of 1ha of Grade 1 land, and 50ha of Grade 2 land are provisionally mapped.

5.2.69 The only potential source of contamination identified for the reservoir and water treatment works site so far is Chatteris Airfield which is situated within the

reservoir site. This site includes grassed runways that are used by relatively small aircraft. No accidents involving leaking fuel or fire are known to have occurred on the site. The potential for ground contamination will be confirmed by ongoing ground investigations followed by analysis of results to assess and quantify risks.

Main site construction impacts and mitigation (the natural environment)

5.2.70 It is likely that during construction of the reservoir, the Fens landscape would be subject to habitat disturbance, biodiversity loss and the natural setting would be altered. Mitigation measures would ensure that any loss to the natural environment is sensibly compensated for, where appropriate.

5.2.71 Construction activities such as vegetation clearance, excavation and earthworks, erection of buildings and installation of pipelines have potential to impact habitats and species. Impacts include habitat loss, degradation and severance, disturbance to terrestrial and aquatic fauna (via noise, vibration, lighting, human presence), and possible killing or injury of terrestrial/aquatic fauna through the removal of occupied resting or breeding sites.

5.2.72 Construction traffic (on site and using road routes to reach the reservoir and water treatment works) could result in air pollution from vehicle emissions and dust from vehicle movements resulting in enrichment and/or acidification of habitats, leading to possible changes in plant community composition.

5.2.73 To ensure legal compliance with relevant wildlife legislation, appropriate mitigation strategies for legally protected species found to be present will be developed in consultation with Natural England as the ecology baseline for the Project evolves.

5.2.74 The potential for impacts on the qualifying features and conservation objectives of the Ouse Washes SPA, SAC and Ramsar site, The Wash Ramsar and SPA, and The Wash and North Norfolk Coast SAC will be considered through the HRA. Further information on the HRA can be found in Appendix B – Our approach to other environmental assessments. The EIA will also assess potential for impacts on additional SSSI features that are not part of the SPA, SAC and Ramsar designations.

5.2.75 Protective measures, as will be set out in the relevant management plans, would be implemented during construction to minimise direct and indirect impacts (such as air pollution, habitat fragmentation and loss of ecological connectivity) to protected habitats and species. Indicative construction measures that may be used during the construction phase are set out in Appendix A. Direct impacts to designated sites and habitats of principal importance located within and adjacent to the Indicative Project Boundary would be avoided or reduced as far as possible.

5.2.76 Habitat creation would take place on the reservoir site and is currently proposed to include peat wetlands, wetland restoration, new watercourses, woodland planting, grassland and species-specific habitat enhancements, for example, for water voles. Habitat creation proposals are subject to ongoing assessment and development and may alter as the Project design develops.

5.2.77 During construction, site runoff from construction compounds and active construction sites, dewatering from excavations, and road runoff from construction haul roads and commissioning flows, would be managed. Drainage would be provided and maintained to control water movement during the works. The runoff

would be intercepted, attenuated and where necessary, treated on site to ensure that any discharge into the rivers and channels does not increase flood risk, has a low sediment content and is of suitable water quality. Bunding of excavated soil and material stockpiles would be incorporated to construction site sustainable drainage systems, e.g. settlement and detention basins, ditches, treatment facilities, etc.

5.2.78 The construction and presence of the reservoir and water treatment works would lead to the loss of catchment within the Middle Level, which could lead to a reduction in water flow in the catchment. However, the extent of catchment which would be lost under the reservoir footprint is a small proportion of the total within the Middle Level water body (approximately 2% total water body area) and no change in the water available within the catchment is expected.

5.2.79 The construction of the reservoir would include excavation of superficial deposits and bedrock geology that intercepts groundwater levels. Therefore, temporary drainage and dewatering measures would be put in place, where required, to provide a dry working environment. Changes in groundwater levels are likely to occur, but due to the presence of clay across the area, these changes would remain local. Groundwater levels would be monitored prior to construction and this would continue throughout as well as after construction. This monitoring would focus on sensitive features which rely on groundwater levels. The monitoring would be used to inform how to mitigate changes in groundwater levels across the construction process, such as returning water to local watercourses to maintain flow, or to ground to maintain groundwater flow to sensitive archaeological features or wetlands.

5.2.80 Construction of the reservoir embankment, water treatment works, and any associated facilitating works would likely impact local flood risk and surface water drainage of the IDBs at the reservoir site. Mitigation measures would ensure no increase in flood risk to off-site areas during every stage of the construction period. Mitigation measures could include minimising obstructions to flood waters, providing compensatory storage where feasible, supporting flood defences and/or channel improvements, sustainable drainage systems (SuDS) and other internal drainage measures.

5.2.81 The construction of the reservoir and water treatment works would lead to the removal of a network of drainage channels across the site. In any area where the removal of these channels would isolate upstream drainage, an alternative drainage route would be established before construction commences to ensure that drainage is maintained and there is no increase in flood risk from the local drainage ditches.

5.2.82 Opportunities are also being investigated for the proposed habitat creation areas around the reservoir site to deliver flood risk and drainage management, alongside other natural environment mitigation requirements.

5.2.83 Construction activities, in particular, excavation and earthworks would lead to permanent removal of land from agricultural use, including loss of best and most versatile land. Excavation without the restoration or re-use of soil would lead to loss of soil as a resource and ecosystem service, including support of ecological

habitats and biodiversity, support for the landscape, protection of the historic environment and provision of raw materials. The use of heavy machinery, inappropriate soil handling and stockpiling may lead to long-term soil compaction and loss of soil structure and quality for ecosystem services. Excavation of peat and exposure to oxygen would result in loss of carbon to the atmosphere and inappropriate handling could lead to a deterioration of peat structure and quality. Mitigation measures would be developed and included in construction phase management plans, such as ensuring appropriate stripping, handling, storing and placement of soil resources with measures including restricting soil handling during wet periods, use of tracked/low ground pressure vehicles and appropriate segregation of soil types and horizons.

5.2.84 Likely geology and land quality impacts during construction include exposure of human health receptors (primarily construction workers) to potentially contaminated arisings. There may also be the creation and migration of dusts off site during the construction works, for example from excavations, soil management and stockpiling. Potential leachates and mobile contaminants could also migrate through preferential pathways which are introduced during construction activities. However, soils are unlikely to be contaminated and if present, are unlikely to be at a level to pose significant risks. For example, pesticides and fertilisers present in agricultural land are not considered to be a probable source of contamination due to their biodegradation. Iron ochre is expected to be present within peat and poses the risk of oxidising to acid sulphate if exposed to oxygen during excavation. This can be prevented by ensuring the peat remains waterlogged and inclusion of relevant measures in the management plans which will be submitted as part of the DCO application.

5.2.85 No impacts are expected relating to geological resources due to the absence of designated or sensitive geological resources within the area.

Main site operational impacts and mitigation (the natural environment)

5.2.86 The proposed new reservoir and associated areas of landscaping and habitat creation would provide additional foraging habitat and resting and breeding sites for a variety of species. It is proposed that recreational use of the main site during its operation would be located within specific zones with relevant management measures identified to minimise potential disturbance and damage to these habitats and species.

5.2.87 Recreational use of the reservoir site also has the potential to introduce and/or spread invasive species such as by recreational equipment inadvertently carrying and spreading invasive species from one location to another. Appropriate biosecurity management facilities and protocols would be incorporated into the proposals for the operation of the reservoir site.

5.2.88 The lighting layout and specification at the water treatment works and buildings at the reservoir site would be designed in accordance with good practice to avoid and reduce disturbance and displacement of fauna sensitive to light spill. Landscape planting would also be used to screen adjacent sensitive areas from operational lighting.

5.2.89 There is some potential for noise from plant such as heating and ventilation units at the visitor hub disturbing species using the reservoir site. As the design of this infrastructure continues to evolve, opportunities to reduce noise levels would be sought, and noise control measures implemented as required.

5.2.90 Solar photovoltaic panels have the potential to negatively impact birds and bats as they can mistake the reflective surfaces of the panels for a water source or open area and collide with them, causing injury or death. Depending on the size of the panels, they could have potential to displace birds from their natural habitats. Some birds may use the panels for perching or nesting, which could lead to damage to the panels. Careful site selection, consideration of which form of panels (ground-mounted, roof-top or floating) are most appropriate and measures such as bird proofing would be considered to minimise negative impacts.

5.2.91 Operation of the reservoir and water treatment works could result in changes in water chemistry, water regime, surface water quality/quantity and groundwater quality/quantity. This could have a negative impact on terrestrial and aquatic habitats, flora and fauna and features of designated sites. Proposed mitigation measures are discussed further below.

5.2.92 Regular management of the reservoir would ensure that its biodiversity value is maintained, as well as long-term management of other habitats created on site.

5.2.93 The presence of the reservoir and water treatment works could affect the groundwater levels within the surrounding area, due to the reservoir forming a barrier to any groundwater flow in the area. Monitoring and assessment are currently underway to assess the potential impacts on groundwater levels. Where necessary, monitoring and mitigation measures would be included in the design to mitigate potential adverse effects on groundwater levels. These may include new drainage channels to help remove excess groundwater, or discharge of collected groundwater back into areas where groundwater levels may be lowered and sensitive receptors affected.

5.2.94 The new reservoir offers an opportunity to assist with local flood and drainage management in the Middle Level system by using some of the excess water in winter to fill the reservoir, manage surface water runoff to existing rates, and so reduce demands on St Germans Pumping Station and other associated water level management pumps.

5.2.95 Nevertheless, the presence of the reservoir embankments and associated infrastructure in Flood Zones 2 and 3, without mitigation, could cause adverse flood risk impacts . Further mitigation measures may be required to protect the development from flooding throughout its lifetime and to minimise flood risk elsewhere. . Additional mitigation measures being considered include flood storage and attenuation, flow diversion on the floodplain, improvements to flood defences and channels, and internal drainage measures.

5.2.96 Opportunities are also being investigated for the proposed inlet channel and habitat creation areas around the reservoir site to deliver further flood risk and drainage management, in combination with other natural environment mitigation requirements. This would include working with other flood risk management activities provided by other organisations, where appropriate.

5.2.97 The Reservoirs Act 1975 places requirements on reservoir designers and operators to keep the proposed development and those around it safe for the duration of its lifetime. A legally appointed Reservoir Engineer and a team of independent reservoir panel engineers would ensure good practice mitigation measures are embedded in the design and operation of the reservoir to reduce the risk of flooding from its operation. However, the reservoir may cause some off-site flood risk impacts in the extremely unlikely event that water levels need to be reduced in an emergency. The Reservoirs Act 1975 requires that appropriate design features and operational procedures are in place to manage drawdown in a controlled manner. There are ongoing discussions with our regulatory stakeholders on the most appropriate approach to assess and manage the risks associated with controlling an emergency, as part of the EIA process.

5.2.98 Impacts on agricultural land and soil would be the result of construction activities. No new impacts are expected as a consequence of operational activities.

5.2.99 The Project would include systems in place to prevent any contamination during operation. Any existing contamination would be managed during the construction phase to negate any risks from existing contamination impacting human health, controlled waters or the environment during operation.

Main site: landscape and historic environment

Context

5.2.100 The landscape surrounding the reservoir site and water treatment works is generally flat, open, and low-lying with a distinctive fen and 'Fen Isle' topography. The area is an intensively farmed fenland landscape, sparsely vegetated with few trees and hedgerows. The Forty Foot Drain, Sixteen Foot Drain, Nene Washes, and the Ouse Washes are notable landscape features cutting across the fen. The area is a largely unsettled, arable landscape with isolated villages and scattered individual properties. The fens are relatively tranquil, but on main roads and within settlements and business parks, tranquillity is low.

5.2.101 The underlying superficial geology within the reservoir site area is dominated by fen deposits. These were once a vast wetland, formed from around c.10,000 BC onwards and have significant potential for preserved organic remains. The layers of peat and silt were formed during periods of sea level rises and falls, as well as waterlogging, through to the 17th century. These deposits are surrounded by areas of subtly higher ground at Doddington, Chatteris and Honey Hill, which eventually became islands.

5.2.102 Palaeolithic and Mesolithic activity is rare within this area, however, there is potential for activity to be preserved at depth, buried by the fen deposits. Neolithic activity is largely reflected through isolated finds of axeheads, although there is tentative evidence for burials on Honey Hill. Bronze Age activity is prevalent on Honey Hill, where over 20 barrows have been identified. Settlement activity, dating to the late Bronze Age and Iron Age, has been identified on the higher ground at Chatteris, Doddington and Honey Hill. As seen elsewhere across the Fens (see Section 4.2), there is potential for trackways and canals connecting these islands. These communication links would have been vital to allow communities to move people and goods across the landscape.

5.2.103 The Roman occupation of the Fens began in the first century AD, with administrative and agricultural centres established at locations such as Stonea and Langwood Hill Drove. Roman settlement activity persisted in locations of Bronze Age/Iron Age settlements on the higher ground. This includes small settlements identified near Doddington and the scheduled Roman settlement on Honey Hill (see Figure 1-2). Following the end of Roman rule, smaller tribal groups likely inhabited the region, with Ely emerging as a significant power centre by the 7th century. Archaeological evidence is limited, although there is evidence for occupation around Chatteris and March during this period.

5.2.104 The medieval period saw the growth of nucleated settlements on fen islands such as Doddington and Chatteris as the Bishops of Ely extended their influence. An informal network of artificial watercourses, overseen by the Bishops, supported drainage and transport, as well as trade. This includes Fenton Lode, a canal which ran northwards from Chatteris to March, via Doddington. The Bishops also established a moated palace at Doddington as a summer residence. Arable farming is evident on the higher drier ground through the mapped remains of ridge and furrow. Seasonal grazing for livestock likely extended into the surrounding fens.

5.2.105 Significant changes occurred during the post-medieval period as the Fens were systematically drained for agriculture. The local economy became increasingly centred on agriculture, with Chatteris developing and expanding, aided by the provision of railway connections in the 19th century. Isolated farm complexes such as Holly House Farm, also sprang up across the landscape as agriculture intensified.

5.2.106 During the 20th century, agriculture remained central to the local economy, with fields being merged to meet rising demand and accommodate mechanisation. However, the drainage has led to the shrinkage of land due to peat erosion and desiccation. This in turn has undermined the foundations of buildings constructed on the peat and many farm complexes have been majorly altered or demolished. Drainage management was restructured under the Land Drainage Act 1930, leading to the creation of internal drainage boards. During World War II, pillboxes were constructed to defend the drains, such as the Forty Foot, as an attack on these would have caused catastrophic flooding. Additionally, the former railway line between Chatteris and March was repurposed into a road following its closure in 1967.

Main site construction impacts and mitigation (landscape and historic environment)

5.2.107 Construction activities within the main site reservoir and water treatment works site that would cause direct loss of landscape features include:

- large-scale enabling works
- site clearance and vegetation removal
- setting up and use of compounds and laydown areas
- demolition of buildings
- construction of structures/buildings and haul roads to the affected existing road network
- movement of plant and construction traffic

- excavations and earthworks and the formation of the reservoir and central peninsula.

5.2.108 The construction activities and visual distraction of introduced plant and vehicles, temporary fencing, security fencing and material storage would be apparent and would erode the generally rural landscape character and tranquillity within the fenland landscape.

5.2.109 Lighting from construction-related activity, including vehicle lights, may have adverse impacts on the night-time environment of residents located in the vicinity of the construction activities. Visual amenity considerations will inform the process for developing construction methods and components, such as those relating to:

- site lighting
- hoarding, fences, and screening
- construction access routes
- tree and vegetation removal, retention, and protections
- handling and storage of soils
- siting of compounds.

5.2.110 Construction works, such as excavation of the reservoir borrow pit, foundations for the water treatment works infrastructure and works associated with the proposed option for a new rail siding and haul route, would likely remove archaeological and palaeoenvironmental remains. This includes possible prehistoric and Roman activity identified on the higher ground at Doddington. Construction could also result in dewatering of surrounding wet and organic deposits across the fen areas. There is potential for permanent damage to archaeological remains due to deposit compression from construction vehicles, plant or the presence of embankments.

5.2.111 A programme of archaeological investigation including geoarchaeological investigations and trial trenching, is underway and continues to inform the understanding of how this landscape has developed and been used over time. Groundwater monitoring continues to inform how changes to the water regime may affect the historic environment. This will inform the design and development of appropriate mitigation, which reflects the archaeological importance of what is found, as well as wider landscape priorities.

5.2.112 Significant archaeological remains would be avoided where possible, through careful design, changes to construction methods and preservation *in situ*, where appropriate. Changes to the groundwater regimes would be carefully managed prior to, and during construction, to avoid dewatering of organic deposits. Mitigation measures in relation to this are set out within the Section 5.2 under the *Main site construction impacts and mitigation (the natural environment)* heading. Archaeological remains that cannot be avoided would be mitigated through preservation-by-record measures, such as excavation and monitoring activities.

5.2.113 These construction activities and the completed structures have the potential to change the setting of heritage assets within the surrounding area. This includes the scheduled moated manor at Doddington and the Grade II listed Holly House Farmhouse at Horseway. These changes would reduce the agricultural character of the landscape, which currently forms part of the setting of many of the heritage assets in the vicinity.

5.2.114 The construction and presence of the proposed haul road from the new rail siding at Manea has the potential to change the setting of the scheduled Stonea Camp. These changes could affect the ability to appreciate the significance of the asset.

5.2.115 The reservoir and water treatment works are likely to affect the character of the historic landscape through the introduction of the reservoir and removal of post-medieval drains.

5.2.116 Visual amenity considerations, including changes to the setting of heritage assets, will inform the process for developing construction methods and components. Construction activities would be undertaken with reference to the relevant codes of practice and applying good practice to reduce detrimental changes to the setting of the asset (see Section 5.2 under the *Main site construction impacts and mitigation (people and communities)* heading for more information). Landscape planting and careful design of new buildings and structures would help mitigate permanent impacts and would help to integrate the new structures into the landscape.

Main site operational impacts and mitigation (landscape and historic environment)

5.2.117 Upon completion of the construction phase, the disruption by construction activity would reduce. The presence and operation of the reservoir, and associated infrastructure, traffic and lighting, along with increased recreational use, would result in a direct disturbance and permanent change to the local landscape character of the Fens.

5.2.118 The existing flat, arable farmland and vegetation would be removed and replaced with a large-scale bunded reservoir. The local landform would be permanently altered. The presence of the reservoir, water treatment works, associated infrastructure, traffic and lighting, along with increased recreational use, would potentially affect the rural character of the landscape and the sense of tranquillity. The presence and operation of the new water treatment works, and associated fencing, access roads, traffic and lighting, would result in a direct disturbance and permanent change to the local landscape character of the Fens. Planting, habitat creation and careful design of new buildings and structures would help reduce these impacts and help to integrate the new reservoir, water treatment works and associated infrastructure into the landscape.

5.2.119 Planting, habitat creation and careful design of new buildings and structures would help mitigate these impacts. Mitigation planting on the reservoir embankment slopes (where feasible from an engineering perspective), and within adjacent areas of green infrastructure and habitat creation, would help to break up the visual mass of the reservoir and strengthen the tree cover pattern associated with the 'Fen Isle' settlement edges. Tree planting, habitat creation, recreational opportunities and green infrastructure improvements, such as the creation of a footpath and cycle network, would provide a range of new landscape features within the landscape.

5.2.120 The reservoir and water treatment works would present permanent physical changes to landscape character including changes to topography, land use, vegetation cover, footpaths/PRoWs and roads and the presence of above-ground

infrastructure, visitor centre and car parks. Management of new habitats, such as wetlands and lagoons, would likely alter landscape character and visual amenity.

5.2.121 Permanent changes to the setting of heritage assets are anticipated from proposed new structures, lighting, noise and traffic movements associated with operation of the Project. Planting and careful design of new buildings and structures would help mitigate these impacts and integrate these into the landscape. Proposals for access and lighting would be developed to include measures to minimise impacts on night-time views.

6 Treated water transfers

6.1 Treated water transfers: current proposals

6.1.1 Water supply infrastructure is proposed to transfer treated water to connection points within the existing Anglian Water and Cambridge Water supply networks. This infrastructure would include underground pipelines and service reservoirs, which provide storage at the connection points. Together these are referred to as the treated water transfer infrastructure.

6.1.2 The Project does not include upgrades to the existing supply network, except where necessary to facilitate connections and integrate with existing network control systems.

6.1.3 Two pipeline corridors and service reservoir locations have been identified as described below.

- The first pipeline corridor would transfer treated water from the water treatment works to Anglian Water customers, connecting to the existing water supply system via a new service reservoir at Bexwell, north-east of Downham Market.
- The second corridor would provide treated water for Cambridge Water customers, connecting to the existing system via a new service reservoir near Madingley, north-west of Cambridge. This pipeline corridor would also feature a short spur corridor, connecting the main corridor to the existing Bluntisham service reservoir.

6.1.4 The water supply pipeline and the associated construction working areas would be located within the proposed pipeline corridors.

6.1.5 Figure 1-1 shows the treated water transfers from the reservoir, the service reservoir locations and the associated construction working areas and construction traffic routes. Further detail regarding the routing and design of treated water transfer infrastructure is provided in Sections 2.3 and 6.3 of the Design Refinement Report (Anglian Water and Cambridge Water, 2025b).

Treated water transfers: construction

6.1.6 An overview of the construction phase is included in Section 2.2. More detailed information on the construction proposals for the treated water transfers infrastructure, is provided in Section 8.5 of the Design Refinement Report (Anglian Water and Cambridge Water, 2025b).

6.1.7 Construction traffic associated with the treated water infrastructure is anticipated to be similar to the traffic related to the raw water transfers infrastructure. Further information on construction traffic proposals is provided in Section 7.3 of the Design Refinement Report (Anglian Water and Cambridge Water, 2025b) and proposed construction traffic routes are shown on Figure 1-1.

Treated water transfers: commissioning, operation and maintenance

6.1.8 It is anticipated that commissioning phase activities would include flushing and chlorination of pipework, testing of equipment (e.g. leakage, pressure and output testing) and testing of operational and maintenance procedures. Operational maintenance and repair activities may include drainage of sections of pipeline and service reservoirs, and appropriate control measures would be put in place to manage any discharges to local watercourses.

6.2 Treated water transfers: initial environmental information

6.2.1 Impacts on the environment surrounding the treated water transfer infrastructure resulting from the construction and operation of the Project are discussed below. The scale of these impacts would depend on the overall duration, frequency and proximity of the activities and features associated with the Project in relation to nearby receptors. The EIA process described in Chapter 3 will assess effects of these impacts on receptors at the next stages in the development of the Project proposals. These assessments will inform the development of the design of the Project and the methodologies for construction, including the identification of mitigation measures to avoid or reduce significant environmental effects. Further information on the approach to mitigation is provided in Section 3.6 and examples of mitigation measures are provided in Appendix A.

Treated water transfers: people and communities

Context

6.2.2 The treated water transfer infrastructure would be located within an area mainly comprising greenfield arable farmland, as well as farm buildings (for example, grain stores) and some residential properties.

6.2.3 Key settlements in proximity to the Reservoir to Bexwell transfer infrastructure include Downham Market, Wimbotsham, Nordelph, Christchurch, Lakes End, Welney and Manea (see Figure 1-2). These settlements fall within the administrative area of Fenland District Council and King's Lynn and West Norfolk Borough Council. The Fens Reservoir to Madingley transfer infrastructure passes through the administrative areas of Fenland District Council, Huntingdonshire District Council and South Cambridgeshire District Council, in proximity to the settlements of Chatteris, Pidley, Somersham, Bluntisham, Needingworth, Holywell, Swavesey, Hardwick, Coton and Madingley (see Figure 1-2).

6.2.4 Parts of the treated water transfer corridor from the proposed reservoir to Madingley including the proposed location of the new service reservoir itself, are within the areas designated as Cambridge Green Belt.

6.2.5 Visual receptors around the new Bexwell service reservoir are located within Downham Market's north-east settlement edge, Bexwell's northern settlement edge, the A10 and PRoWs and farmland to the north and east of Downham Market, and to the west of Coton. Visual receptors around the new Madingley service reservoir are located within Coton's north-western settlement edge, dispersed properties, farmsteads and the local PRoW network within farmland to the west of Coton and south of the A428.

6.2.6 Within and surrounding the Indicative Project Boundary for treated water transfers infrastructure area, there would be views across a rural landscape from the PRoW network, long distance paths (Fen Rivers Way, Hereward Way, Rothschild Way, Pathfinder Long Distance Walk, and the Ouse Valley Way) and navigable waterways (River Great Ouse, Relief Channel (Ouse), River Delph and Hundred Foot Drain). People using the PRoW network, road network and navigable waterways outside of settlements have views of the rural landscape, as do residents of properties on the outer edges of settlements.

6.2.7 The surrounding area includes a network of PRoWs and amenity spaces that support outdoor recreation and community wellbeing such as parks, playing fields and sports facilities.

6.2.8 The A-roads that are likely to be used by traffic associated with the Project are primarily rural in nature, largely avoiding built up areas. They are already carrying a substantial volume of traffic, including HGVs. B-roads and local/minor roads likely to be used are also rural in nature, however, B-roads are more likely to pass through settlements and minor roads may be constrained in terms of geometry. B-roads and minor roads also carry lower volumes of traffic and are therefore more sensitive to changes in traffic flows or the number of HGVs using the routes.

6.2.9 As is typical for rural areas, information from the 2021 Census (Office for National Statistics, 2022) on commuting patterns indicates a high reliance on private vehicles. The data also indicated that walking to work is less common than national and regional averages, suggesting limited active travel infrastructure or accessibility. These patterns are relevant when considering construction traffic routes and potential disruptions to local travel and access.

6.2.10 Land parcels that fall within the Indicative Project Boundary have been identified and relevant engagement is ongoing with affected landowners. Detailed data on agricultural holdings and the nature of the farm enterprises will be collected as part of our ongoing baseline data collection to inform future stages of the EIA.

6.2.11 The existing noise levels at receptors with the potential to be affected by activities associated with the proposed treated water transfer infrastructure would vary according to whether they are located in a rural or more built-up area, however, no Noise Important Areas have been identified in the vicinity of the treated water transfer infrastructure. Higher noise levels would be expected at locations closer to transport infrastructure and industrial activity, with Defra's strategic noise mapping showing higher noise levels experienced near the A142 east and south of Chatteris, A1123 north of Needingworth, A14 south of Swavesey and A428 east of Hardwick. In more rural areas, agricultural noise sources (e.g. tractors working in fields) would be intermittent and highly variable in nature.

6.2.12 Baseline noise surveys have been undertaken at locations representative of receptors that may be affected by operational activities to understand the existing noise environment. The methodology and locations used for the surveys were agreed in advance with representatives of the local planning authorities and county councils for the whole treated water transfers route (Fenland District Council, Huntingdonshire District Council, South Cambridgeshire District Council, Borough Council of Kings Lynn and West Norfolk, Cambridgeshire County Council and

Norfolk County Council). Noise levels were measured continuously for over one week. The data has been processed to present 'typical' noise levels for different times of the day, evening, night and weekend.

6.2.13 Information gathered from desk-based studies to understand the existing air quality environment has suggested that no exceedances of the Air Quality Objective for NO2, PM10 and PM2.5 are likely at locations that may be affected by the installation of treated water transfer infrastructure, or potential construction transport routes. Information on construction traffic at this stage suggests that no route is expected to travel within or adjacent to any AQMAs although the Huntingdon AQMA is located close to the A141.

6.2.14 Baseline air quality monitoring is being undertaken, focusing on NO2 as an indicator of exhaust emissions. Monitoring locations have been chosen to represent areas of sensitive receptors that may be affected by an increase in construction traffic.

6.2.15 As discussed in Section 4.2 under the *Raw water transfers: people and communities* heading, data has been collected to form an understanding of the local communities surrounding the treated water transfers and their socio-economic status. This information will be used to assess the likely ability of communities to respond to changes resulting from the construction and operation of the Project, and establish the potential significance of effects.

Treated water transfer construction impacts and mitigation (people and communities)

6.2.16 Construction activities could include enabling works, site clearance, vegetation removal, the setting up and use of compounds and laydown areas, construction of structures/buildings, excavations and earthworks, and installation of pipeline. Many of the potential impacts from the installation of the pipelines would be of short duration, occurring for days or weeks as the different activities such as vegetation clearance, topsoil strip, excavation, pipelaying and restoration, each progress along the pipeline routes. There may be periods of inactivity as these different working groups progress at different times and rates. Impacts of longer duration (months or years) may occur from the use of construction compounds and at the service reservoir sites.

6.2.17 Construction activities could result in potential temporary visual effects and changes in views for residential properties, farmsteads, employment areas, and users of the local PRoW and road network located around the service reservoirs at Bexwell and Madingley. Due to the transient and limited nature of construction required to install the pipeline and quick reinstatement of trench excavations, any visual effect would be temporary until the works are completed.

6.2.18 Construction activities for the Bexwell service reservoir could potentially affect views from Downham Market's north-eastern settlement edge, Bexwell's northern settlement edge, PRoWs, the A10, and local roads within farmland to the north and east of Downham Market. Construction activities for the Madingley service reservoir would potentially affect views from Coton's north-western settlement edge, from dispersed properties, farmsteads and the local PRoW and road network within farmland to the west of Coton and south of the A428.

6.2.19 The noise, movement and visual intrusion generated during construction could result in a loss in tranquillity. Where used, lighting from construction-related activity, including vehicle lights, may have adverse impacts on the night-time environment of nearby residents. Visual amenity considerations will inform the process for developing construction methods and components, such as those relating to:

- site lighting
- hoarding, fences and screening
- construction access routes
- tree and vegetation removal, retention and protections
- handling and storage of soils
- siting of compounds.

6.2.20 The machinery used for various construction activities including the construction of structures and buildings, excavation, earthworks, and installation of pipelines could result in increased noise and vibration levels causing potential disruption for receptors in the area local to the proposed treated water transfer infrastructure. Piling may be necessary for the foundations of structures and buildings such as the service reservoirs. Some forms of piling can also lead to vibration impacts, however, these would be experienced over a much smaller area than noise impacts from the same activity.

6.2.21 Key activities, such as trenchless crossing compounds, some highways works and concrete pours, may need to be undertaken outside of daytime working hours, indicating the potential for evening and weekend working. Works outside of core daytime working hours would be subject to more stringent noise thresholds, and additional mitigation would be included as appropriate. The ongoing EIA will include noise and vibration prediction.

6.2.22 Construction activities would be undertaken with reference to the relevant codes of practice for noise and vibration control in construction and open sites and applying best practicable means to reduce any noise or vibration impacts. We will work with the Environmental Health Officers at the local planning authorities in the area to develop construction noise and vibration mitigation measures. An example of a mitigation approach is the three-step construction noise mitigation process which Anglian Water has used successfully on other projects. This is described further in Section 4.2 under the Raw water transfers construction impacts and mitigation (people and communities) subsection.

6.2.23 Construction of service reservoirs, pumping stations and installation of pipelines including excavation and earthworks could result in adverse air quality and amenity impacts for relevant sensitive receptors in proximity to construction activities. These impacts would be as a result of the creation of dust and particulate matter. Receptors could include both sensitive human receptors such as residential properties and sensitive ecological sites.

6.2.24 The construction dust guidance (IAQM, 2024) indicates that exhaust emissions from on-site plant (non-road mobile machinery) are usually unlikely to make a significant impact on local air quality. Exhaust emissions from construction plant and non-road mobile machinery for transfers and associated water infrastructure will, however, be assessed qualitatively as part of the EIA.

6.2.25 Good practice mitigation measures to avoid and reduce adverse air quality impacts, such as monitoring and managing dust and selecting 'low emission' equipment would be included in the relevant management plans and implemented during the construction phase.

6.2.26 Construction activities within agricultural land parcels could lead to a reduction in the scale or nature of land use or enterprise leading to a discontinuation of an agricultural activity. Land parcels that fall within the Indicative Project Boundary have been identified and relevant engagement is ongoing with affected landowners. Specific impacts that could make agricultural activity less viable include loss of farm holdings, farm buildings, infrastructure or disruption to access to a land parcel. Most impacts associated with treated water transfers would be temporary and agricultural land would be reinstated. However, depending on the duration of construction activities, temporary impacts may result in permanent effects on certain farm enterprises if they are removed from agricultural activity for such a long period that it is not viable for them to recommence post-construction activities. Measures to avoid or reduce adverse impacts would be considered as the development of the proposals progresses, including locating Project components near field boundaries where practicable, and by considering the suitability of the remaining portion for continued agricultural use. Where severance of land parcels is unavoidable, alternative access routes would be sought. Financial compensation is not considered in the environmental assessment but forms part of the statutory regime for acquiring land rights and the ongoing negotiation with affected parties.

6.2.27 Construction activities, such as pipeline construction, may result in temporary disturbance or closure of land open to the public and the local PRoW, bridleway and cycle network. The transfer routes would intersect with PRoWs and navigable waterways which would need to be managed during construction to minimise disruption to their users. Mitigation measures to avoid or reduce these adverse impacts include communication with local communities and relevant stakeholders on planned closures, or diversions of access routes and provision of reasonable alternatives.

6.2.28 Construction activities for the transfers are expected to have only limited socio-economic effects due to their relatively small scale and short duration. Some modest benefits may arise from local contracting opportunities and spending by the workforce in nearby communities, but these are anticipated to be temporary and not a substantial driver of long-term economic change.

6.2.29 Any short-term increase in workforce numbers could lead to a small rise in demand for local accommodation and services, though this is expected to be manageable within existing community capacity. Engagement with local stakeholders, including businesses, service providers and residents, would be maintained throughout the construction period to ensure that any issues arising are identified and addressed in a timely and appropriate way.

6.2.30 The above identified temporary impacts on people and communities such as visual amenity (including lighting), tranquillity, dust and vehicle emissions and noise all have the potential to impact on physical and mental health and wellbeing, especially for individuals who may be exposed to a combination of these impacts regularly. However, the proposed routing of water transfer infrastructure has

generally been selected to avoid the larger settlements where practical, so the number of residents who may be affected overall is likely to be relatively low. Furthermore, the nature of the linear works would mean that impacts in any given location along the route would be time limited (as construction works progress along the route), again reducing the potential scale of any health impact from the water transfer infrastructure. For walkers, cyclists and horse riders who may be affected by traffic impacts or changes to PRoWs, the health impacts are likely to relate to temporary impacts on quality of life, such as from occasional frustration and inconvenience when encountering routes affected by the construction activities. Effective construction planning, signage and communication as outlined above, would help mitigate impacts on community wellbeing.

Treated water transfer construction traffic impacts and mitigation (people and communities)

6.2.31 Construction traffic associated with the treated water transfer infrastructure would be transient on B-roads and minor roads with construction activities moving along the transfer pipeline and therefore having a duration of months in the majority of locations, rather than years. A change in traffic volumes resulting from construction traffic associated with the proposed treated water transfer infrastructure could affect all users of the highway network during the construction phase. Walkers, cyclists and horse riders could experience adverse effects on the environmental impact categories of severance (separation of people from goods, services, and each other by busy roads or other transport infrastructure), amenity (pleasantness of a journey), road safety (rate of collisions), or fear and intimidation (caused by moving objects) due to increased traffic on the local highway network.

6.2.32 A change in traffic volumes could also result in other users of the local highway network experiencing adverse effects on delay and road safety. The public transport network immediately surrounding the Project may also be affected. The locations where these effects may be experienced and the scale of impact will be determined as part of the EIA process, as outlined in Chapter 3.

6.2.33 Measures to manage and mitigate effects from construction HGV and light vehicle movements are anticipated to include the preparation of relevant construction traffic management plans. These plans would include details of measures to control (e.g. routing and timing restrictions), monitor and enforce construction traffic movements. These plans would also describe mechanisms for managing the design of accesses and off-site highway works to mitigate traffic impacts, where necessary. For example, several minor roads would be used to reach construction areas and appropriate highway mitigation works may include passing bays and widening on bends to improve two-way traffic flow.

6.2.34 Construction traffic, both on site and on the local road network, in addition to the above construction activities, would affect visual receptors including residents and those using local road and PRoW networks.

6.2.35 The use of HGVs and workers' vehicles during the construction of the proposed treated water transfer infrastructure may result in increased noise levels, causing noise impacts at receptors near to construction transportation routes. Although vehicle movements are not considered to generate substantial vibration,

particularly on well maintained even surfaces, there is the potential for vibration impacts at receptors very near to construction transportation routes. The level of impact would be influenced by the existing traffic flow and the change experienced as a result of construction traffic. Greater noise impacts would be more likely for receptors near to roads where existing traffic flows are relatively low and construction transportation movements could result in a greater increase in traffic noise compared to busier roads such as A-roads. Measures to reduce construction transportation noise and vibration impacts would be considered as the development of the proposals progresses, including where practicable, the routing of HGVs to avoid receptors, splitting construction traffic between multiple routes and timing construction traffic movements to avoid the more sensitive times of the day and week. The ongoing EIA will include noise and vibration prediction.

6.2.36 Exhaust emissions from construction traffic may result in adverse air quality impacts at relevant sensitive receptors near to 'affected roads', i.e. roads expected to see an increase in traffic due to the Project. These receptors could include both sensitive human receptors such as residential properties, and sensitive ecological sites. Good practice mitigation measures to avoid and reduce adverse air quality impacts would be to proportion trips over multiple routes and specify enhanced emissions standards to be met by construction vehicles where practicable.

6.2.37 During construction of the treated water transfer infrastructure, residents may experience some temporary disruption from road or PRoW closures and diversions. Construction traffic and related activities could also reduce ease of access to certain community and amenity spaces in the short term.

6.2.38 These impacts are expected to be temporary and manageable, with access restored once works are complete. Mitigation measures would focus on maintaining clear and timely communication with local communities and stakeholders about any planned closures or diversions, so that residents are able to plan accordingly.

6.2.39 The above identified impacts on people and communities may give rise to a variety of health impacts. These could include impacts on physical, mental and social health and wellbeing. For example, the construction traffic impacts on walkers, cyclists and horse riders such as changes to the existing levels of severance, amenity, road safety, and fear and intimidation, may contribute to indirect health effects associated with reduced physical activity, should these groups be discouraged from active travel or recreational journeys via the local road network.

Treated water transfer operational impacts and mitigation (people and communities)

6.2.40 The Project would introduce new infrastructure into the landscape to the north-east of Downham Market and to the west of Coton. The presence of the new service reservoirs and associated fencing, access roads, traffic and lighting would potentially result in a change in view for residential properties, farmsteads, employment areas, and users of the local PRoW and road network located within the vicinity of the new infrastructure.

6.2.41 The presence of the new Bexwell service reservoir would potentially affect views from Downham Market's north-eastern settlement edge, Bexwell's northern settlement edge, the A10, and PRoWs and local roads within farmland to the north

and east of Downham Market. The presence of the new Madingley service reservoir would potentially affect views from Coton's north-western settlement edge, from dispersed properties, farmsteads and the local PRoW and road network within farmland to the west of Coton and south of the A428. Planting and careful design of new buildings and structures would help mitigate these impacts and integrate the new structures into the landscape. Proposals for access and lighting would be developed to include measures to minimise impacts on night-time views.

6.2.42 The pipelines would be underground, and the permanent above-ground installations would be limited and small in size. Once the works are complete the pipeline corridors would be reinstated to include the replanting of areas of vegetation removed (where feasible in relation to easements and access requirements) and reseeding of grassland areas disturbed. Reinstatement of soft landscape areas would take time to establish and recover from the works, therefore minor changes to the view would potentially be noticeable within the immediate area of the pipeline corridor. Mitigation planting would be considered to reduce the visual impact of above-ground features such as new valves, where possible.

6.2.43 The potential for noise impacts associated with the service reservoir sites themselves is anticipated to be low. However, potential operational noise impacts are likely to be focused on fixed mechanical plant installations. These industrial noise sources would be required to work on a 24-hour basis, and have the potential to result in increased noise levels at nearby receptors. The ongoing environmental impact assessment will include noise and vibration prediction.

6.2.44 As the design of the associated water infrastructure sites continues to evolve, opportunities to reduce noise levels will be sought, and noise control measures implemented as required. Established example mitigation measures that will be considered are described in Section 4.2 under the *Raw water transfers operational impacts and mitigation (people and communities)* heading.

6.2.45 No significant operational vibration effects are anticipated, as all plant capable of generating vibration would be mounted with suitable isolation to prevent vibration being transmitted to the ground and impacting nearby receptors.

6.2.46 Operation of the proposed treated water transfer infrastructure is not anticipated to generate a substantial level of traffic, and so noise and vibration impacts are considered likely to be minimal.

6.2.47 During the operational phase, significant emissions to air from treated water transfers are not anticipated. However, pumping stations may have backup generators and the potential for these to have adverse effects to air quality will be assessed as part of the EIA.

6.2.48 Only light vehicles associated with staff movements for routine maintenance are anticipated during the operational phase. Occasionally a larger volume of traffic, including HGVs, may be necessary due to long-term replacement of equipment. However, these would be short-term in nature and are expected to be isolated to a small number of locations at any given time. As a result, significant transport-related effects are not anticipated during operation of the treated water transfers.

6.2.49 Permanent and temporary impacts on agricultural holdings would arise from construction activities only and there would be no impacts during the operational phase.

6.2.50 Operational effects could impact employment and access to amenities, such as increased employment opportunities and potential improvements to pathways and walkaways, connecting local residents and visitors to community facilities. To address any adverse impacts, a socio-economic strategy for the Project as a whole is currently being developed and would consider how local employment and skills, and support for cultural infrastructure can be enabled. This may include initiatives for education and training. Further information on the development of this strategy is included in the Design Refinement Report (Anglian Water and Cambridge Water, 2025b).

6.2.51 In terms of health impacts, assuming sensitive landscaping, low noise or well noise-insulated plant, along with other mitigation identified above, it is not expected that the majority of people would be conscious of, or adversely affected by the treated water transfer infrastructure once it has been in place over time and become part of the general wider utilities infrastructure that people are accustomed to in developed societies. The health benefit from the provision of a safe and resilient water supply to communities across the region, is likely to be the main health impact, albeit potentially taken for granted once established.

6.2.52 In terms of health impacts, assuming sensitive landscaping, low noise or well noise-insulated plant, along with other mitigation identified above, it is not expected the majority of people would be conscious of, or adversely affected by, the treated raw water infrastructure once constructed and any mitigation is well established. The health benefit from the provision of a safe and resilient water supply to communities across the region is likely to be the main health impact.

Treated water transfers: the natural environment

Context

6.2.53 Swan and Goose Functionally Linked Habitat associated with the Ouse Washes SPA and Ramsar (see Figure 1-2) and potential spined loach Functionally Linked Watercourse Habitat within a 5km buffer associated with the Ouse Washes SAC is located within the Indicative Project Boundary for both treated water transfer routes. The treated water transfer infrastructure is located more than 2km from The Wash SSSI, Ramsar and SPA, and The Wash and North Norfolk Coast SAC. These designated sites are located within The Wash Inner and the Great Ouse operational water catchments.

6.2.54 Mare Fen Local Nature Reserve (designated for its mosaic of grassland types, ditches and ponds situated within the floodplain of the River Great Ouse) is located within 100m of the Indicative Project Boundary for the pipeline transfer from the reservoir to Madingley (see Figure 1-2).

6.2.55 The reservoir to Bexwell transfer crosses Well Creek LWS. The transfer from the reservoir to Madingley crosses Sutton and Mepal Pumping Station Drains CWS, Pidley Fen Drains CWS, Heath Fruit Farm CWS, River Great Ouse CWS, Middle Fen CWS, Fen Drayton Gravel Pits CWS, Fen Drayton Lakes RSPB Reserve, Swavesey

Meadows CWS and Madingley Slip Roadside Verge CWS. Other non-statutory designated sites are located within 250m of the Indicative Project Boundary.

6.2.56 Lowland fen irreplaceable habitat is shown to be present (based on desk study data) where the Indicative Project Boundary for the pipeline to Madingley intersects with Fen Drayton Gravel Pits CWS. The presence of this habitat requires ground-truthing as part of the field surveys being undertaken across the Project.

6.2.57 Habitats of principal importance (coastal and floodplain grazing marsh, traditional orchard, no main habitat but additional habitats present, and good quality semi-improved grassland) are found within the designated sites listed above. The Indicative Project Boundary also intersects with deciduous woodland south of Madingley and mudflats where the transfer from the reservoir to Bexwell crosses the River Great Ouse. The rest of the Indicative Project Boundary is dominated by arable land with extensive ditch networks.

6.2.58 Great crested newt, otter and water vole are known to use waterbodies within the Indicative Project Boundary. Badger and brown hare have also been recorded in the arable fields. A number of bat species have been recorded in the buildings and trees in the wider arable landscape. A wide range of bird species associated with the farmed landscape in this part of the Fens are present including barn owl, skylark and yellow wagtail.

6.2.59 The treated water transfer pipelines are located within numerous catchments which include the Middle Level, the Relief Channel, Counter Drain (Sutton and Mepal IDB including Cranbrook Drain), Ouse (Roxton to Earith), Marley Gap Brook, Swavesey Drain, Fen Drayton Drain and Old West River. The service reservoirs at Bexwell and Madingley would be located in the catchments of the Relief Channel and the Old West River respectively.

6.2.60 The geology beneath the treated water transfer infrastructure consists of silt and sand layers in some areas, and sand and gravel or clay, silt, sand and gravel in others. Some of these layers have potential to support local water supplies and are designated as secondary aquifers. These superficial deposits overlie seven different bedrock formations, some of which are principal aquifers able to readily transmit groundwater and may be used for public supplies.

6.2.61 In the Fenland areas, the groundwater levels are expected to lie at or within a few metres below ground level all year round. The flow of groundwater is anticipated to be slow and controlled mainly by the man-made IDB drains built across the fenland. These IDB drains direct groundwater into channels to lower groundwater levels from flooding the fenland under wet climate conditions.

6.2.62 The treated water infrastructure crosses land located within Flood Zones 2 and 3 in multiple locations, however, the most downstream reaches of pipeline and the service reservoirs at Bexwell and Madingley are largely within Flood Zone 1. The fenland reaches of the pipeline are in Flood Zones 2 and 3. The Ouse Washes, Nene Washes, and thousands of kilometres of flood defence embankments manage and reduce the risk of flooding along with various other flood risk management infrastructure. Flood risk in the most downstream reaches is limited to where the proposed pipeline crosses ordinary watercourses or surface water flow paths.

6.2.63 Large portions of the treated water transfer route and surrounding 1km area are 'unclassified' by British Geological Survey Groundwater Flooding Susceptibility (BGS, 2010). However, numerous localised areas with 'Potential for Groundwater Flooding of Property Situated Below Ground Level' and 'Potential for Groundwater Flooding to Occur at Surface' are present on the route of the pipeline from the reservoir to Madingley.

6.2.64 National Soil Association mapping reports that the soils in the vicinity of the treated water transfer infrastructure are largely clayey soils and variably humose and mineral, with peat in some parts. According to provisional agricultural land classification mapping (Natural England, 2007), treated water transfers would extend through mainly Grade 1 (excellent) land between Barroway Drove and Somersham. To the south, between Christchurch and Hardwick, treated water transfers cover Grade 2 (very good) land, Grade 3 (good to moderate) land and Grade 4 (Poor) land. There is also an area of Grade 3 land in the north near Bexwell.

6.2.65 A historical landfill has been identified within 250m distance to the area, situated in Downham Market, and is considered a potential source of contamination. Similarly, historical land use reviews also revealed wartime use of current agricultural land north of Bexwell, near Downham Market, as a Royal Air Force airfield. One former refuse tip in the study area near to Downham Market had a substantial land pollution incident attributed to the area in 2009. However, a recent report indicated that while there is evidence of metal/metalloid contamination, it is not classified as contaminated land. It is unlikely that the landfill sites would pose an unacceptable contamination risk to human health and controlled waters receptors as development in these areas would be avoided as much as possible. Nonetheless, a series of ground investigations and assessment of risks will be completed in line with statutory guidance, which would further characterise the site conditions.

Treated water transfer construction impacts and mitigation (the natural environment)

6.2.66 Construction of the treated water transfer infrastructure could impact designated sites, habitats and species during activities such as vegetation clearance, excavation and earthworks and erection of buildings and installation of pipelines. Impacts include habitat loss, degradation and severance, disturbance to terrestrial and aquatic fauna (via noise, vibration, lighting, human presence), and possible killing or injury of terrestrial/aquatic fauna through the removal of occupied resting or breeding sites.

6.2.67 Construction traffic could result in air pollution from vehicle emissions and dust from vehicle movements resulting in enrichment and/or acidification of habitats, leading to possible changes in plant community composition.

6.2.68 The potential for impacts on the qualifying features and conservation objectives of the Ouse Washes SPA, SAC and Ramsar site (see Figure 1-2), The Wash Ramsar and SPA, and The Wash and North Norfolk Coast SAC will be considered through the HRA. Further information can be found in Appendix B – Our approach to other environmental assessments. The EIA will also assess potential for impacts on additional SSSI features that are not part of the SPA, SAC and Ramsar designations.

6.2.69 Protective measures, as set out in the relevant management plans, would be implemented during construction to minimise direct and indirect impacts to designated sites and protected habitats and species. Examples of mitigation measures are provided in Appendix A. Direct impacts to designated sites and habitats of principal importance located within and adjacent to the Indicative Project Boundary would be avoided or reduced as far as possible. Trenchless pipeline installation techniques would be used where possible to avoid sensitive areas. Habitat loss as a result of pipeline installation would be temporary as land would be reinstated once construction is complete. Where possible, reinstatement of hedgerows and trees would use the same or similar species to those removed.

6.2.70 To ensure legal compliance with relevant wildlife legislation, appropriate mitigation strategies for legally protected species found to be present will be developed in consultation with Natural England as the ecology baseline for the Project evolves.

6.2.71 The key types of receptors at risk from flooding include people, properties, agricultural land (including Grade 1 agricultural land), and environmentally sensitive sites such as CWSs.

6.2.72 Construction activities such as erecting or altering a temporary structure or excavation near a main river, could result in a change to flood risk from watercourses to adjacent land, along with changes to floodplain capacity and flow paths available during floods. Where transfer pipelines would be installed near main rivers, trenchless techniques are to be used to minimise flow disruption and flood risk impacts. For smaller crossings, good practice would be identified in the relevant management plans and applied to manage flows during construction to ensure working areas are safe and that there is no increase in flood risk to off-site areas.

6.2.73 During construction, site runoff from construction compounds and active construction sites, dewatering from excavations for service reservoirs, road runoff from construction haul roads, and commissioning flows, would be managed to avoid impacts on flood risk, sediment load and water quality. Drainage would be provided and maintained to control water movement during the works. The runoff would be intercepted, attenuated and, where necessary, treated on site. Bunding of excavated soil and material stockpiles would be incorporated to construction site sustainable drainage systems, e.g. settlement and detention basins, ditches and treatment facilities.

6.2.74 The construction of the service reservoirs would include excavation of superficial deposits and bedrock geology at depths which could intercept groundwater levels. Therefore, temporary drainage and dewatering measures would be made available to be put in place where required to provide a dry working environment. Groundwater levels would be monitored prior to the start of construction and this would continue throughout and after completion of the construction phase as required. This monitoring would focus on locations of sensitive features which rely on groundwater levels. The monitoring would be used to inform how to mitigate changes in groundwater levels across the construction process, such as returning water to local watercourses to maintain flow, or to ground to maintain groundwater flow to sensitive archaeological features or wetlands.

6.2.75 Mitigation measures could involve moving stockpiles to be located outside Flood Zone 3 wherever possible, compensatory storage in gravity-drained areas away from flood defences, diversion of flow paths and conveyance measures in pumped catchments and/or attenuation measures embedded within the proposed design for the Project. Other appropriate measures may include minimising obstruction of flood water, flood flow diversion to suitable locations, flood defence and/or channel improvements, and internal drainage measures. This would include working with other flood risk management authorities.

6.2.76 Construction of both service reservoirs would likely require the removal of several small drainage channels. If these channels provide a flow path for upstream channels, then mitigation measures will be explored, such as alternative drainage being installed to maintain these flow paths to ensure no increase in flood risk.

6.2.77 Construction activities, in particular, excavation, earthworks and installation of pipelines could lead to temporary or permanent removal of land from agricultural use, including loss of best and most versatile land. Construction may lead to an alteration to land drainage, which could lead to flooding or waterlogging of agricultural land. The use of heavy machinery, inappropriate soil handling and stockpiling may lead to long-term soil compaction and loss of soil structure and quality for agriculture and ecosystem services. Excavation without the restoration or re-use of soil would lead to loss of soil as a resource and ecosystem service, including support of ecological habitats and biodiversity, support for the landscape, protection of the historic environment and provision of raw materials. Excavation of peat and exposure to oxygen would result in loss of carbon to the atmosphere and inappropriate handling could lead to a deterioration of peat structure and quality. Mitigation measures would be developed and included in construction phase management plans, ensuring appropriate stripping, handling, storing and placement of soil resources with measures including restricting soil handling during wet periods, use of tracked or low ground pressure vehicles and appropriate segregation of soil types and horizons. As part of reinstatement activities, field drains would be restored or re-provided as required to ensure appropriate drainage.

6.2.78 Likely geology and land quality impacts during construction include exposure of human health receptors (primarily construction workers) to potentially contaminated soils and materials. There may also be the creation and migration of dust off site during the construction works, for example from excavations, soil management and stockpiling. Potential leachates and mobile contaminants are also likely to move through pathways which are created during construction activities. While there is the potential to encounter contamination from these localised sources, mitigation of any impacts would be achieved by preventive measures which would be set out in the relevant management plans. Pesticides and fertilisers present in agricultural land are not considered to be a probable source of contamination due to their biodegradation. Environmental receptors such as groundwater are not expected to be significantly affected due to the presence of low permeability soils, and the absence of confirmed direct contaminant pathways. Climate change carries the potential to degrade agricultural land within the area, erode soils, and cause contaminant release into the environment from historic nearby sources.

6.2.79 Within the existing soil, iron ochre is expected to be present within peat and poses the risk of oxidising to acid sulphate if exposed to oxygen during excavation. This could be prevented by ensuring the peat remains waterlogged and relevant measures are included in construction phase management plans.

Treated water transfer operational impacts and mitigation (the natural environment)

6.2.80 The lighting layout and specification at the pumping stations and service reservoirs will be designed in accordance with good practice to avoid and reduce disturbance and displacement of fauna sensitive to light spill. Landscape planting would also be used to screen adjacent sensitive areas from operational lighting.

6.2.81 Operation of the proposed treated water transfer infrastructure could result in changes in water chemistry, water regime, surface water quality/quantity and groundwater quality/quantity. This could have a negative impact on terrestrial and aquatic habitats, flora and fauna and features of designated sites. Proposed mitigation measures are discussed further below.

6.2.82 The presence of the two service reservoirs would require the removal of some drainage channels across the sites and has potential to impact on flow and water level in the local catchments, due to the loss of catchment area under the service reservoir footprint. The extent of catchment and length of watercourses which would be lost is a small proportion of the total and therefore this is not expected to significantly affect flows in the local watercourses.

6.2.83 The presence of the service reservoirs partly below ground could affect the groundwater levels within the surrounding area. Monitoring and assessment are currently underway to assess the potential impacts on groundwater levels. Where necessary, mitigation measures would be embedded into the design to ensure there is no adverse rise in groundwater levels. These may include new drainage channels around the service reservoir to help move groundwater around the structure where it can re-enter the ground and ensure no adverse effects on sensitive receptors.

6.2.84 Presence of pipelines and other infrastructure could impact groundwater levels. Where risks are identified, particularly associated with sensitive features, mitigation measures would be included. Monitoring would be included where necessary to ensure mitigation is sufficient to minimise any prevailing impacts on levels and flows of groundwater. Mitigation could include gravel material along the pipeline to allow groundwater to flow across the pipeline route. Where needed, clay bunds would be included within these gravel channels to ensure groundwater does not flow along the pipeline route, reducing local groundwater levels.

6.2.85 The majority of the treated water transfer infrastructure is below ground and designed to manage any change in groundwater levels. Therefore, it is likely to have little to no impact on flood risk during operation. Both service reservoirs are located in Flood Zone 1 and outside of critical surface water drainage areas; however, these sites will be required to develop an outline drainage strategy to ensure no increase in surface water runoff above existing rates in accordance with Lead Local Flood Authority requirements.

6.2.86 During routine maintenance or in the event that the service reservoirs need to be emptied, water may be discharged to local watercourses. The design would allow for attenuation and treatment, such as de-chlorination prior to discharge, to ensure no adverse changes in flow or water quality in the receiving watercourses would occur as a result.

6.2.87 The Reservoirs Act 1975 places requirements on reservoir designers and operators to keep the proposed development and those around it safe for duration of its lifetime. The Reservoirs Act 1975 requires that the proposed design and operational procedures are in place to manage drawdown in a controlled manner. A legally appointed Reservoir Engineer ensures good practice mitigation measures are embedded in the design and operation of the service reservoirs to reduce the risk of flooding from their operation.

6.2.88 Impacts on agricultural land and soil would arise during the construction phase and are identified above.

6.2.89 The operation of the Project would include systems in place to prevent any contamination during operation. Any existing contamination would be managed at construction phase to negate any risks from impacting human health, controlled waters or the environment during operation.

Treated water transfers: landscape and historic environment

Context

6.2.90 The treated water transfers extend south-west from Downham Market in the north via Chatteris to the settlement of Madingley in the south. To the east of Downham Market, a farmland and plantation landscape has a flat to gently rolling topography of medium to large-scale arable farmland predominantly bound by hedgerows and interspersed with woodland and small villages. The fenland landscape to the south and west of Downham Market is generally flat, open, and low-lying with a distinctive fen and 'Fen Isle' topography. The area is an intensively farmed landscape, sparsely vegetated with few trees and hedgerows. The Forty Foot Drain, Sixteen Foot Drain, Nene Washes, and the Ouse Washes are notable landscape features cutting across the fen. The area is a largely unsettled, arable landscape with isolated towns and villages and scattered individual properties.

6.2.91 Around the settlements of Somersham and Colne, a low-lying 'fen margin' landscape forms a transition between the Fens to the north and east and the gently undulating farmland of the central claylands to the south and west. The area is sparsely settled, arable and pastoral farmland with isolated villages located on higher ground. A matrix of land uses including farmland, orchards and deciduous woodland are a key characteristic of the landscape.

6.2.92 To the west of Somersham and Bluntisham the gently undulating arable farmland of the central claylands landscape has a large-scale field pattern with few hedgerows or hedgerow trees, giving rise to a predominantly open landscape. To the south of Bluntisham, the flat, low-lying, broad shallow valley of the River Great Ouse flows generally west to east. Existing gravel workings, and former workings which have been flooded to create significant areas of open water, are notable landscape features.

6.2.93 To the south of the River Great Ouse, the low-lying gently undulating arable farmland of the fen edge claylands landscape gently rises to the south. Arable fields defined by a mix of fragmented hedgerows and drainage ditches are arranged in a slightly haphazard rectilinear pattern. The area is sparsely vegetated except for tree clumps and shelterbelts around isolated farms and to the edge of settlements. Orchards are a distinctive landscape feature, particularly around settlements.

6.2.94 Further south, the wooded claylands landscape rises from the fen edge claylands to form a gently undulating plateau. Rectilinear arable fields are arranged in an irregular way. Scattered blocks of woodland are linked by a mature, fragmented hedgerow network. A key feature of the landscape is the repetition of historic parkland features, tree belts, clumps, woodland and waterbodies. There is a localised influence from the A14 and A428 major transport routes.

6.2.95 The farmland landscape is relatively tranquil, but on main roads, within settlements, business parks and gravel works, tranquillity is low.

6.2.96 The land surrounding the treated water transfer infrastructure is low lying, between 1-4m Above Ordnance Datum, and large parts lie within former fen areas which are largely mapped as tidal flats. Evidence of early human activity is limited, although isolated finds of Mesolithic/Neolithic date are recorded. Across the rest of the Fens, rising sea levels covered low-lying areas with silt and clay, which may have hidden earlier evidence for occupation. Elsewhere (see Section 4.2 under the *Raw water transfers: landscape and historic environment* heading and Section 5.2 under the *Main site: landscape and historic environment* heading), there is evidence of people settling, farming and burying their dead on higher ground in the Bronze Age. This includes Downham Market, Wimbotsham and along the Western Plateau. Settlement activity and barrows have been identified in several locations, including the terraces along the River Great Ouse, Boxworth and Bar Hill.

6.2.97 The Iron Age saw continued occupation on higher ground due to a persistently high water table, despite a fall in sea levels. Some sites show continuous use from the Bronze Age into the Roman period. There is evidence for expansion of activity across the Cambridgeshire Claylands. Larger settlements, field systems and trackways have been recorded, connecting communities, such as at Childerley and Boxworth. During the Roman period, the Iron Age settlements on higher ground continued to be occupied, with some expanding and new ones established. New roads such as the Via Devana, which ran westwards from Cambridge, and the Fens Causeway between Peterborough and Denver, were built. Salt production was a significant industry at this time, especially near tidal streams around Nordelph.

6.2.98 In the early medieval period, activity continued to concentrate on higher ground, with sites such as one near Boxworth showing continuous occupation from Roman times. By the medieval period, many settlements were established, such as Swavesey. People farmed the higher ground, and the Fens were used for seasonal grazing. Moated manor houses such as Overhall Grove, and religious sites such as Swavesey Priory, reflect the high status and importance of some settlements. Swavesey developed as a local administrative and trading centre as an inland port.

6.2.99 The 17th-century drainage of the Fens transformed the landscape, enabling large-scale farming (see Section 4.2 under the *Raw water transfers: landscape and*

historic environment heading). Gravel extraction became an important industry, supported by improved transport, particularly around the River Great Ouse. In the post-medieval period, notable parks and gardens were created at Childerley and Madingley that evolved from medieval manors. The settlement pattern preserves a historic rural character and reflects the dominance of agricultural practices in these areas.

Treated water transfer construction impacts and mitigation (landscape and historic environment)

6.2.100 Construction activities including enabling works, site clearance, setting up and use of compounds and laydown areas, vegetation removal, excavations and earthworks and construction of haul roads would cause direct loss of landscape features. The construction activities and visual distraction of introduced plant and vehicles, temporary fencing, security fencing, material storage and use of crane machinery would be apparent and would erode the generally rural landscape character and levels of tranquillity within the local landscape.

6.2.101 For the pipelines, changes to the local landscape character would be within the immediate setting only, impacting only areas adjacent to the pipeline corridors. There would be a minor loss of existing landscape features such as existing vegetation within the pipeline corridors. More permanent changes would be from the introduction of the above-ground infrastructure of the service reservoirs located within the surrounding landscape.

6.2.102 Construction works, such as excavation for pipeline trenches and foundations for buildings, would likely remove archaeological and palaeoenvironmental remains. This includes possible prehistoric and Roman activity along the River Great Ouse and Roman activity at Madingley. Construction activities could also result in dewatering of surrounding wet and organic deposits, particularly across the fen areas around Somersham and also at the River Great Ouse, where palaeochannels may survive.

6.2.103 A programme of archaeological investigation, including geoarchaeological investigations and trial trenching, will inform the understanding of how this landscape has developed and been used over time. Groundwater monitoring will inform how changes to the water regime may affect the historic environment. This will inform the design and development of appropriate mitigation which reflects the archaeological importance of what is found, as well as wider landscape priorities.

6.2.104 Significant archaeological remains would be avoided where possible, through careful design, changes to construction methods and preservation *in situ*, where appropriate. Changes to the groundwater regimes would be carefully managed prior to and during construction to avoid dewatering of organic deposits. Mitigation measures in relation to this are set out within Section 6.2 under the *Treated water transfer construction impacts and mitigation (the natural environment)* heading. Archaeological remains that cannot be avoided would be mitigated through preservation-by-record measures, such as excavation and monitoring activities.

6.2.105 The construction of the pipelines and presence of new service reservoirs could result in temporary and permanent changes to the setting of heritage assets. This

includes Grade II listed buildings at Wood End, Bluntisham, Wimbotsham and Holywell Conservation Areas, and a scheduled and Grade II listed barn at Bexwell. These changes would reduce the agricultural character of the landscape, which positively contributes to the significance of the designated heritage assets.

6.2.106 These heritage assets will be investigated to understand how their surroundings contribute to their historic interest and to what extent the Project would permanently impact this. Where historic value may be lost, mitigation measures will be considered.

6.2.107 Visual amenity considerations, including changes to the setting of heritage assets, would inform the process for developing construction methods and components. Construction activities would be undertaken with reference to the relevant codes of practice and applying good practice to reduce detrimental changes to the setting of the asset (see People and Communities for more information). Landscape planting and careful design of new buildings and structures would help mitigate permanent impacts and integrate the new structures into the landscape.

Treated water transfer operational impacts and mitigation (landscape and historic environment)

6.2.108 Upon completion of the construction phase, the disruption by construction activity would reduce. The presence and operation of the new service reservoirs, and their associated fencing, access roads and lighting could result in a direct disturbance and permanent change to the local landscape character. Planting and careful design of new buildings and structures would help mitigate these impacts and integrate the new structures into the landscape. Proposals for access and lighting would be developed to include measures to minimise impacts on night-time views.

6.2.109 The pipeline would be underground, and the permanent above-ground installations would be limited and small in size. Once the construction works are complete, the pipeline corridor would be reinstated and would include the replanting of areas of vegetation removed (where feasible in relation to easements) and reseeding of grassland areas that were disturbed. Mitigation planting would be considered to reduce the impact of above-ground features such as new valves, as part of the design process.

6.2.110 There is the potential for permanent changes to the setting of some heritage assets from lighting, noise and traffic movements associated with operation of the Project. Planting and careful design of new buildings and structures would help mitigate these impacts and integrate the new structures into the landscape.

7 Project-wide impacts

7.1 Introduction

7.1.1 There are several environmental effects that would be realised at a Project-wide level, rather than relating to specific locations or parts of the Project. These comprise the following:

- Carbon – Considering how the Project would impact the global climate levels through increased greenhouse gas emissions, leading to climate change.
- Climate resilience – Considering the effects of future climate change on the Project's structures, assets, and its core function in supplying water.
- Material assets and waste – Considering the overall needs for raw materials on the Project, as well as the generation of waste products, and how these might be accommodated respectively within the supply chain and appropriate waste management facilities. Impacts associated with mineral safeguarding and potential sterilisation of peat resources are also described.
- Socio-economic change – As well as specific impacts on community facilities and local jobs, the Fens Reservoir is expected to have wider benefits supporting population growth.
- Wider transport impacts – As well as the effects of the Project on local people's travelling experience on the road and rail network, the Project would be expected to have effects on the transport network.

7.2 Carbon

Context

7.2.1 The development of the Project proposals includes consideration of the potential impact on the global climate, namely through increased greenhouse gas emissions, leading to climate change.

7.2.2 The carbon impact of the Project will be compared with a baseline 'do-nothing' scenario, which proposes no construction of a reservoir and associated water infrastructure and maintaining the current arable land use. Whilst the scale of the Project and associated emissions are likely to be significant, they are not expected to materially affect national objectives for net zero emissions. The evaluation of the Project's carbon footprint will be used to assess the significance of potential impacts and to inform identification of appropriate mitigation measures.

Carbon construction impacts and mitigation

7.2.3 The sources of potential carbon and greenhouse gas emissions during construction include the following:

- Embodied carbon emissions from the construction materials used, including raw material supply, transport and manufacture.
- Carbon emissions associated with construction processes, including transport of materials, workers, plant and equipment to and from the works site and construction and installation processes. The construction of the reservoir is

expected to be the largest source of emissions due to intensive earthworks activities.
- Carbon emissions associated with the transport of waste from the site and the treatment of waste.
- Carbon emissions associated with land use change, for example direct emissions from the reservoir, peat disturbance or changing from an agricultural land use to woodland planting.

7.2.4 Carbon has been considered in the evolution of the design so far, in alignment with PAS 2080:2023 (British Standards Institution, 2023) carbon management process, to embed mitigation to reduce or avoid greenhouse gas emissions.

7.2.5 Mitigation opportunities for the Project would seek to align with the carbon reduction hierarchy set out in PAS 2080:2023 to 'Avoid' emissions where possible by optimising the scope, 'Switch' to lower carbon intensity materials, fuels and processes where possible, and 'Improve' the efficiency of the Project delivery and operation. Design opportunities that aim to avoid or reduce construction carbon, include (but are not limited to):

- developing a reservoir that optimises the cut/fill balance, which would reduce emissions associated with transportation of material
- reducing emissions associated with the handling of peat by avoiding and reducing the conditions in which the peat emits carbon
- enhancement measures to improve the surrounding environment such as habitat creation, which could provide carbon removal from land use change.

7.2.6 Further to the above, one of the key frameworks that will be used is the Construction Leadership Council's Five Client Carbon Commitments (5CCC) (2024) which tackle major construction industry carbon hotspots and are well aligned to the carbon emissions hotspots for the Fens Reservoir. The key areas the 5CCC cover are summarised below:

- Procure for low-carbon construction and provide incentives in contracts.
- Set phase-out dates for fossil fuel use.
- Eliminate the most carbon-intensive concrete products.
- Eliminate the most carbon-intensive steel products.
- Adopt PAS 2080:2023 Carbon Management in Infrastructure, as a common standard.

7.2.7 The procurement of contractors and suppliers would allow for the greatest ability to mitigate carbon emissions. Primary embedded mitigation measures, as mentioned above, are to be integrated into the design where possible. However, 'switch' and 'improve' measures would be the responsibility of contractors and suppliers to review and deliver, based on viability. The need to deliver and explore these further mitigation measures would be embedded into future procurement process and contracts.

Carbon operational impacts and mitigation

7.2.8 The sources of potential carbon and greenhouse gas emissions during operation include the following:

- Carbon emissions from the use of fuel and electricity for the operation of pumps, water treatment works, and other site plant and equipment which consume energy and water.
- Carbon emissions from vehicles used for the delivery of operational materials to site and removal of waste, also including maintenance staff travel.
- Carbon emissions from the operation of chemical treatment plant, with greenhouse gas emissions caused by mining/extraction and any processing of chemicals used within the plant, as well as direct process emissions from operation of the plant.
- Replacement and maintenance activities including emissions from embodied carbon (i.e. materials), construction plant, transport of materials, and the treatment/disposal of waste.
- Carbon emissions associated with ongoing land use change/sequestration.
- Carbon emissions from recreational use of the reservoir (principally assumed to be from travel to and from the site).

7.2.9 Potential opportunities for reducing operational emissions include (but are not limited to) the following:

- Optimising design and processes, including building design, lighting, and energy needs to reduce longer-term maintenance, repair, energy, water use, and chemical consumption.
- Consideration of the opportunities from the ongoing evolution of renewable energy generation and energy storage technologies for use within the reservoir site.
- Using lower emissions vehicles or alternative fuels for the operational vehicle fleet.
- Exploring the need for and opportunities from for a robust carbon offsetting strategy.

7.2.10 The focus on mitigation opportunities is key as the design development progresses, as a significant carbon emission impact is likely to affect the Project's ability to achieve decarbonisation targets.

7.3 Climate resilience

Context

7.3.1 Climate change is projected to affect the East of England area through a number of changes to seasonal climate averages, extreme weather events, and sea level rise over the course of this century and beyond. Future changes in the climate for the East of England are likely to include the following:

- warmer and wetter winters, which may lead to greater severity, frequency and duration of flood events
- hotter and drier summers, which may lead to more frequent and longer droughts

- greater intensity of rainfall events, both in winter and in summer downpours
- gradual sea level rise and increased height of storm surges, which may affect coastal defences and flooding
- potential changes in the intensity and frequency of storms and high winds; however, there is less certainty within climate models relating to this.

7.3.2 The ongoing development of the Project includes the assessment of the effects of future climate change on the Project's structures, assets, and its core function in supplying water throughout the operational lifetime of the reservoir. It also includes consideration of climate effects to the future workforce, recreational users and visitors to the site.

7.3.3 The ongoing design development takes into account future temperatures, rainfall patterns, storms and other future weather conditions that are projected to change over this century. Where potential negative effects to the Project are identified, mitigation measures are being embedded into the design to enhance resilience and future adaptability. Further measures and actions required to monitor and maintain the resilience of the Project as the climate changes will also be identified as the proposals are developed.

7.3.4 Given its importance to regional water resources, and the intended long lifetime of the Project, the design development considers the climate projection data from the Met Office for greenhouse gas emissions leading to the reasonable worst-case scenario of global warming of 4°C by the end of the century. Representative Concentration Pathway (RCP) 8.5 is the scenario used for design development. RCP8.5 is a pathway where greenhouse gas emissions continue to grow unmitigated, leading to a best estimate global average temperature rise of 4.3°C by 2100. In addition to this, design development is considering the potential effects of more extreme climate conditions on safety critical elements of the Project, for example the effects of extreme heat on controls and monitoring equipment for reservoir safety.

Climate effects on construction and mitigation

7.3.5 The changes in average seasonal climate conditions are projected to be minimal between the present day and the end of the construction period; however, construction may still be affected by extreme weather events, such as flooding, storms, water scarcity and heatwaves. These may have effects on construction activities, workforce welfare, and the construction programme.

7.3.6 Weather resilience measures for the construction phase are being identified through the design development and environmental assessments and would be summarised within the relevant environmental management plans. These are likely to include measures to suppress dust, reduce risks of localised rainfall flooding at the construction site, and suitable welfare facilities to maintain a safe working environment in hot weather.

Climate effects on operation and mitigation

7.3.7 Impacts on the Project would result from long-term changes to seasonal averages, for example hotter, drier summers and warmer, wetter winters, as well as changes to short-lived extreme weather events, such as localised flooding due to more intense rainfall or hotter and more frequent heatwaves.

7.3.8 Potential climate effects on the Project during its operational phase are being considered using climate projection data that is available up to the end of this century. Longer-term adaptation options and ways in which the Project can adapt as and when needed are also being considered, which will give a level of flexibility to manage the uncertainties in future climate change.

7.3.9 The primary aims of the Project are to provide a resilient supply of safe, clean, drinking water for future generations and to allow Anglian Water and Cambridge Water to reduce abstractions from the environment, as well as enhancing the region's drought resilience. This is itself an adaptation measure to a future climate, helping to build resilience in water supply. The Project design would mitigate against future climate risks by embedding resilience measures, specifications for climate tolerances, and the capacity to adapt within the design. This would allow for changing infrastructure needs and specifications in the future as the climate continues to change.

7.3.10 Adaptive capacity in the Project design may include allowing capacity for future asset maintenance upgrades that can tolerate changing conditions, such as higher peak temperatures and rainfall.

7.3.11 Adaptive capacity may also consider potential future needs for safe working environments and comfortable visitor facilities, for example leaving space within current designs or designing structures so that shading canopies can be installed on the sides of buildings or in seating areas in the future as summer temperatures increase. This would then be reviewed through the operational lifetime of the reservoir to take into account conditions encountered on site and updated industry guidance, and features such as shading canopies could then be installed as and when needed.

7.3.12 Potential climate-related effects on the Project are listed below. Example mitigation measures are also listed that are being considered and applied as appropriate through design development:

- Effects of high temperatures on structures and mechanical and electrical components, and risks of failure in peak temperatures. Potential mitigation includes the use of passive ventilation, natural cooling and thermal insulation for heat-vulnerable assets and leaving space to install targeted air-conditioning units in future decades.
- Effects of increasing air and water temperatures on water quality within the reservoir and watercourses. Potential mitigation includes measures to reduce the likelihood and effects of algal blooms and low water oxygen levels.
- Effects of hotter, drier summers on vegetation, including new habitats and landscape planting. Potential mitigation includes prioritising the use of increasingly scarce summer rainfall for landscape irrigation and selecting suitable plants to minimise vegetation dieback. This especially applies in areas

where vegetation provides shade and shelter to the future workforce and to visitors to the site, and where vegetation protects assets such as the embankments, and to keep the peat in the wetlands wet.

- Effects of future droughts cracking the clay embankment surfaces. Potential mitigation includes assessing and amending the design to minimise risks from future intense rainfall penetrating surface cracks, or planting drought-resilient species to help stabilise embankment surfaces.
- Effects of future flooding on electrical assets and communication systems. Potential mitigation includes using flood modelling to design water-vulnerable assets to be above projected flood levels, and to design out risks of water ingress into buildings and electrical equipment by raising equipment or selecting electrical components with an appropriate Ingress Protection rating.
- Effects of extreme weather events on the needs for emergency access and evacuation routes within the Project site. Potential mitigation includes designing to provide flood resilience for key access routes.
- Effects of high winds and lightning on vulnerable assets such as electrical and communication systems. Potential mitigation includes designing these assets with wind loading and lightning protection where required.
- Effects of storms on power supply to the site which could impact operations, including outages to off-site external electricity grid supply and communication networks. Potential mitigation includes designing back-up and safe shutdown systems for relevant assets and the inclusion of local power supplies for the site.
- Effects of higher wind speeds and waves on reservoir overtopping. Potential mitigation includes designing freeboard into reservoir water levels to allow for higher winds and waves (noting that future wind speeds are one of the more uncertain areas of climate modelling).
- Effects of higher temperatures and increasing risks of heat-related illness for operational workers and visitors to the site. Potential mitigation includes using vegetation to create naturally cool environments around the reservoir site, thermal insulation in the visitor centre, future installation of shading canopies and, for the most heat-vulnerable workforce and visitors, leaving space to install targeted air-conditioning units in future decades in key indoor spaces.

7.3.13 The Climate resilience chapter in the ES will identify actions and requirements for the lifetime of the Project to monitor, manage and respond to seasonal changes and extreme weather as they are observed in future decades. This is likely to include requirements that outline:

- routine and post-extreme-weather inspections of assets
- monitoring habitat conditions
- site management actions to be initiated in response to temperature or rainfall thresholds being reached
- ongoing review of climate science, industry guidance and asset standards; and use of this to inform future asset upgrades.

7.4 Material assets and waste

Context

7.4.1 The Project would use substantial amounts of materials for its construction phase and generate waste during the construction and operational phases that would require effective management.

7.4.2 The assessment, to be presented in the ES, will consider the impacts from the use of material assets such as steel, aggregates and minerals, concrete, timber, plastic and manufactured construction products. It will also consider the impacts and management of waste generated from the Project and how they may be accommodated within the supply chain and appropriate waste management infrastructure.

Materials and waste construction impacts and mitigation

7.4.3 The Project would require large quantities of materials for the construction of the reservoir, all associated infrastructure, landscaping works, and temporary construction works, such as haul roads, construction compounds and accommodation and welfare facilities for workers at the construction sites. Construction materials include aggregates and minerals from primary, secondary and recycled sources and manufactured construction products such as steel pipes.

7.4.4 Potential impacts associated with the use of material assets for the construction phase of the Project include the following:

- the material assets required may potentially have challenges regarding stock and supply, causing a scarcity of availability
- depletion of non-renewable resources that would be unavailable for future projects
- potential sterilisation of minerals or mineral safeguarding areas that could be worked in the future
- potential sterilisation of peat resources
- emissions associated with the transportation of materials to site.

7.4.5 During the construction phase, the Project is likely to generate inert and non-hazardous waste from the following:

- site preparation works, including green waste from vegetation clearance
- construction, demolition and excavation works
- surplus excavated materials including contaminated ground or ground which needs to be treated before it can be reused
- construction material brought on site but unused, becoming surplus
- damaged stock or off-cuts and packaging material
- municipal solid waste arising from the use of site compounds and accommodation and welfare areas used by construction workers.

7.4.6 Potential impacts associated with the construction phase of the Project from generation and management of waste include the following:

- Permanent reduction in capacity at inert, non-hazardous and hazardous landfill sites from the disposal of waste generated by the Project.

- Potential temporary reduction of the capacity of waste infrastructure, within the region, to continue to accommodate waste from other sources.
- Emissions associated with the transport and management of wastes that require disposal off site.

7.4.7 The Project's design proposes to deliver a positive legacy for surrounding communities and places, in alignment with the National Policy Statement for Water Resources Infrastructure (Defra, 2025). As such, the Project is anticipated to be resource-efficient throughout its lifecycle, promoting the re-use of material assets, thus reducing waste arisings.

7.4.8 Examples of good design measures and essential mitigation relevant to the use of material assets, and waste generation and management that could be used for the Project, include the following:

- Implementing the waste hierarchy and resource efficiency and/or circular economy principles.
- Reusing excavated soil on site for landscaping features, where feasible.
- Achieving a cut and fill balance by reusing excavated materials, with no removal of surplus material off site, where feasible. Excess material would either be used in landscaping or added to the reservoir bowl where practicable.
- Reusing surplus construction materials (especially aggregates) for habitat creation (for example, building hibernacula).
- Sourcing all non-specialist, bulk earthworks materials for the permanent works (embankment and landscaping) of the reservoir on site from borrow pits within the footprint of the reservoir, with no requirement for import.
- Installing pipelines using open cut techniques, with arisings processed and reused as backfill, where practicable.
- Designing the reservoir to manage peat deposits under the embankments and borrow pits, including where appropriate, removal as part of the construction process and reuse on site.
- Using pre-cast material, where applicable.
- Prioritising the sustainable use of material assets and waste and associating this with the selection and management of materials, the protection of land and soil, and the active monitoring of material requirements.
- Providing on-site facilities to segregate waste streams, to enable materials to be kept at their highest value through reuse, recycling or recovery.
- Storing all contaminated and/or hazardous waste (including soil) separately to any non-hazardous and inert materials, to avoid cross-contamination.
- Ensuring relevant documents and management plans are produced to set out the measures and standards of work to be applied during the construction phase.

Materials and waste operational impacts and mitigation

7.4.9 Once the Project is operational, the reservoir and associated water infrastructure would require specific materials for ongoing operation and maintenance. It would also likely generate waste materials.

7.4.10 During the operational phase, the Project is unlikely to require large quantities of material assets and when needed, these are expected to be considerably lower in

comparison to the construction phase. Material assets required during the operational phase are expected to be related mainly to normal operational and general maintenance activities of the reservoir and associated infrastructure, which are anticipated to occur infrequently. Regular maintenance works may require small quantities of aggregates, steel, concrete and other materials consistent with construction works, which would need to be imported, as site-won materials are unlikely to be available or required for operational activities.

7.4.11 Potential impacts associated with the Project's use of material assets during the operational phase include the following:

- Material assets will be required for normal operational activities for the water treatment works and inter-catchment treatment measures. Use of these material assets could potentially cause challenges regarding stock and supply, causing a scarcity of availability.
- Depletion of non-renewable resources that would be unavailable for future projects.

7.4.12 During the operation of the Project, waste would be generated from general maintenance and refurbishment works for both the reservoir and associated water infrastructure and from users of the reservoir's recreation facilities. Relevant waste management infrastructure would need to have sufficient capacity to accommodate waste from the Project. The potential impacts from the generation and management of waste would include permanent reduction in the UK's landfill capacity and temporary reduction in the capacity of other waste management facilities.

7.4.13 Mitigation for the operational phase includes the following:

- Implementing the waste hierarchy and resource efficiency principles.
- Storing all contaminated and/or hazardous waste separately to any non-hazardous and inert materials, to avoid cross-contamination.
- Ensuring waste arisings sent off site for recovery or disposal are only conveyed by an authorised waste contractor and carrier, and that relevant paperwork is obtained and retained for the correct duration.

7.5 Strategic socio-economic impacts

7.5.1 Potential socio-economic impacts are described in Sections 4.2, 5.2 and 6.2 as part of the commentary on people and communities. Many of the impacts described would be relevant across the whole of the Project rather than at the individual locations related to the reservoir and associated water infrastructure. The ongoing EIA will inform the refinement of the design and construction proposals at both the local and strategic level. The benefits and impacts will be summarised within the ES as part of the wider socio-economic narrative which will set the context for the more specific local impacts.

7.5.2 There will be continued development of the Project's socio-economic strategy for both the construction and operational phases. This strategy will support the development of commitments for promoting socio-economic benefits. The anticipated benefits are identified below. Further information on this strategy is

included in the Design Refinement Report (Anglian Water and Cambridge Water, 2025b).

- Providing employment opportunities and upskilling for the local population.
- Supporting local development and communities through the provision of new recreational facilities and employment opportunities.
- Facilitating the growth of rural businesses and providing opportunities for rural workers, whilst supporting diversification of rural businesses.
- Promoting local services, ensuring that rural areas remain vibrant and economically sustainable.
- Improving social cohesion, access to services, and inclusive public spaces, fostering vibrant communities by ensuring access to recreational facilities and social infrastructure.

7.6 Strategic transport impacts

7.6.1 Potential traffic and transport impacts are described in Sections 4.2, 5.2 and 6.2 as part of the commentary on people and communities. Many of the impacts described would be relevant across the whole of the Project rather than at the individual locations related to the reservoir and associated water infrastructure.

Strategic transport construction impacts and mitigation

7.6.2 The Project would generate a change in traffic volumes across a wide area of the highway network during construction, with traffic routes for components overlapping each other in many areas. An overarching construction transport strategy is therefore being developed which considers the holistic impacts of transporting materials and the workforce and the most sustainable solutions, including opportunities for synergies between the various construction sites. This strategy will take consideration of potential interactions with other construction projects and new developments which may also influence traffic flows and volumes.

7.6.3 The transport strategy includes options for movement of bulk aggregates by rail, by a combination of rail and road, and wholly by road. All other materials would be transported by road only. These options offer a range of impacts on different parts of the highway network. The routes likely to experience the largest volumes of construction traffic are A-roads between the strategic road network and the Project, particularly the reservoir and water treatment works.

7.6.4 The A-roads that are likely to be used by traffic associated with the Project are primarily rural in nature, largely avoiding built up areas. They are already carrying a substantial volume of traffic including HGVs, and are therefore likely to be of low sensitivity to change. These are likely to comprise the following:

- A141 between the A14/A1 Brampton Hut Interchange and the A47
- A142 between the A141 at Chatteris and the A14 at junction 37
- A10 between the A142 at Ely and the A14 at junction 33 (Milton Interchange)
- short sections of other A-roads that connect to the above to facilitate access to the raw water and treated water transfer infrastructure.

7.6.5 There are other lower category roads that would need to be used to reach some construction areas associated with the raw water and treated water transfer infrastructure, which may experience a greater proportional change in traffic volumes due to their more lightly trafficked nature. However, these would be shorter in duration than the construction at the main reservoir and water treatment works site due to the transient nature of pipeline construction.

7.6.6 Given the overlap of the highway network being used for the construction of different components, the traffic and transport mitigation would mostly apply Project-wide, to include the following:

- The securing, monitoring and managing of route and timing restrictions for HGV traffic, within construction phase traffic management plans.
- Maximum use of sustainable transport modes to reach construction areas on a daily basis.
- Highway improvements, where deemed necessary.
- Minor highway works on lower category roads to facilitate two-way vehicle movement, including passing bays and widening on bends.
- Shift times for construction workers that lead to commuter travel occurring outside of the peak hours on the network.
- HGV movements timed to be spread across the working day and, if necessary to mitigate impacts on sensitive locations, for example, to avoid specific periods of the day.

Strategic transport operational impacts and mitigation

7.6.7 The Project would provide a recreational facility that offers significant benefits to the local population with active travel connections to ensure visitors can travel in the most sustainable way. The ongoing refinement of the operational transport proposals will include consideration of potential interactions with other developments which may also influence traffic flows and volumes. The ongoing work would incorporate proposals for other modes such as walking, wheeling, cycling, horse riding and public transport. Car parking for vehicle access would also be included as part of the operational design, including those travelling from further afield who may have a reduced choice in transport modes.

7.6.8 Recreational visitors would only be travelling to the reservoir site element of the Project and not the raw water or treated water infrastructure. Access to the reservoir would be mostly via the primary or secondary access points on the A141 and A142, or various active travel connections to the west, south and east of the reservoir.

7.6.9 Staff would be required to operate the recreational facilities at the reservoir on a daily basis along with a small number of deliveries. Maintenance staff would be required for the reservoir, water treatment works and transfers infrastructure, which for routine maintenance is expected to be relatively low numbers.

7.6.10 It is anticipated that the traffic and transport impacts associated with maintenance staff are unlikely to lead to significant environmental effects. Therefore, any mitigation would focus on the visitor and staff movements associated with the recreational facilities and would consider a network-wide approach:

- Operational management plans to secure, monitor and manage the parking facilities including barrier controls, parking areas (permanent and temporary overspill), visitor management, coach facilities and off-site parking controls to reduce potential adverse effects.
- Active travel connectivity to maximise use of walking, wheeling, cycling and horse-riding from the surrounding area, leading to beneficial effects.

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9 Abbreviations

Term	Definition
5CCC	Construction Leadership Council's Five Client Carbon Commitments
ALC	Agricultural Land Classification
AQMA	Air Quality Management Area
BGS	British Geological Survey
BNG	Biodiversity Net Gain
CWS	County Wildlife Site
DCO	Development Consent Order
EIA	Environmental Impact Assessment
ENG	Environmental Net Gain
EqIA	Equalities Impact Assessment
ES	Environmental Statement
FRA	Flood Risk Assessment
HGV	Heavy Goods Vehicles
HRA	Habitats Regulations Assessment
IAQM	Institute of Air Quality Management
IDB	Internal Drainage Board
IEMA	Institute of Environmental Management and Assessment
INNS	Invasive Non-Native Species
LNR	Local Nature Reserve
PRoW	Public Rights of Way
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SEIR	Supporting Environmental Information Report
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage System
WFD	Water Framework Directive
WRMP	Water Resources Management Plan

Figures

Figure 1-1: Our latest proposals

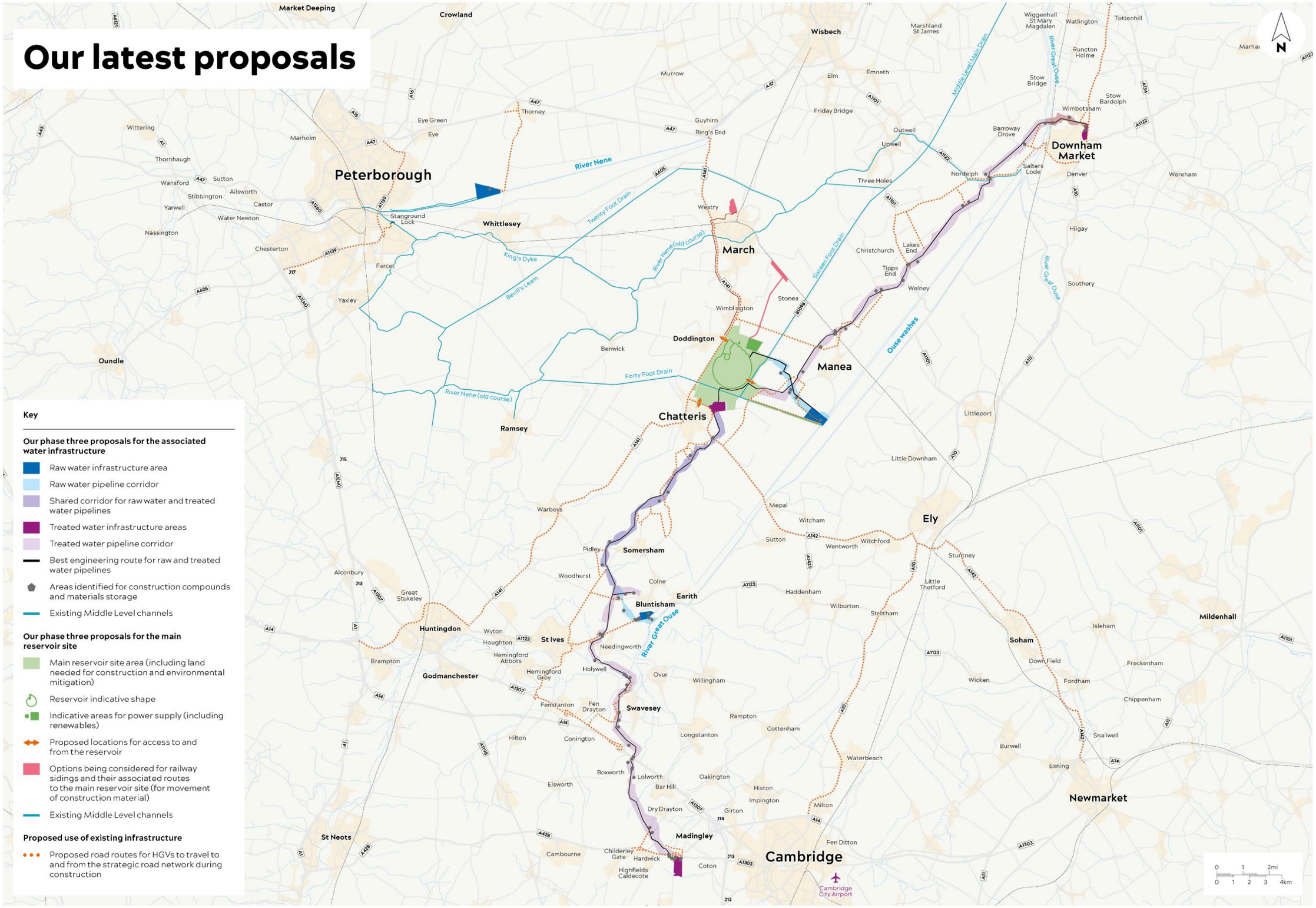
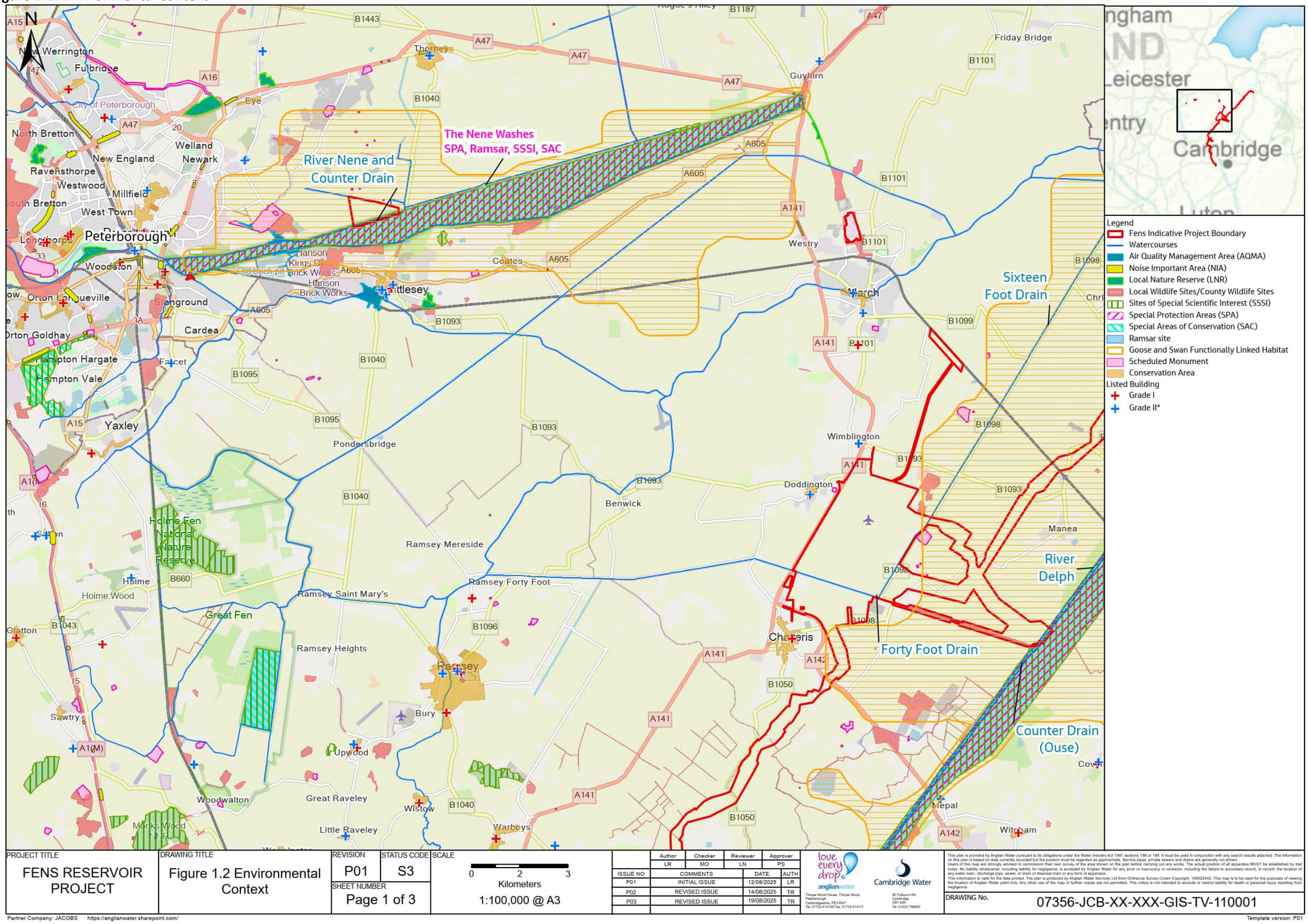


Figure 1-2: Environmental context



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		SHEET NUMBER: Page 1 of 3	SCALE: 0 2 3 Kilometers; 1:100,000 @ A3

ISSUE NO	COMMENTS	DATE	AUTH
P01	INITIAL ISSUE	12/08/2025	LR
P02	REVISED ISSUE	14/08/2025	TR
P03	REVISED ISSUE	19/08/2025	TR

Author	Checker	Reviewer	Approver
LR	MO	LN	PS

DRAWING No. 07356-JCB-XX-XXX-GIS-TV-110001

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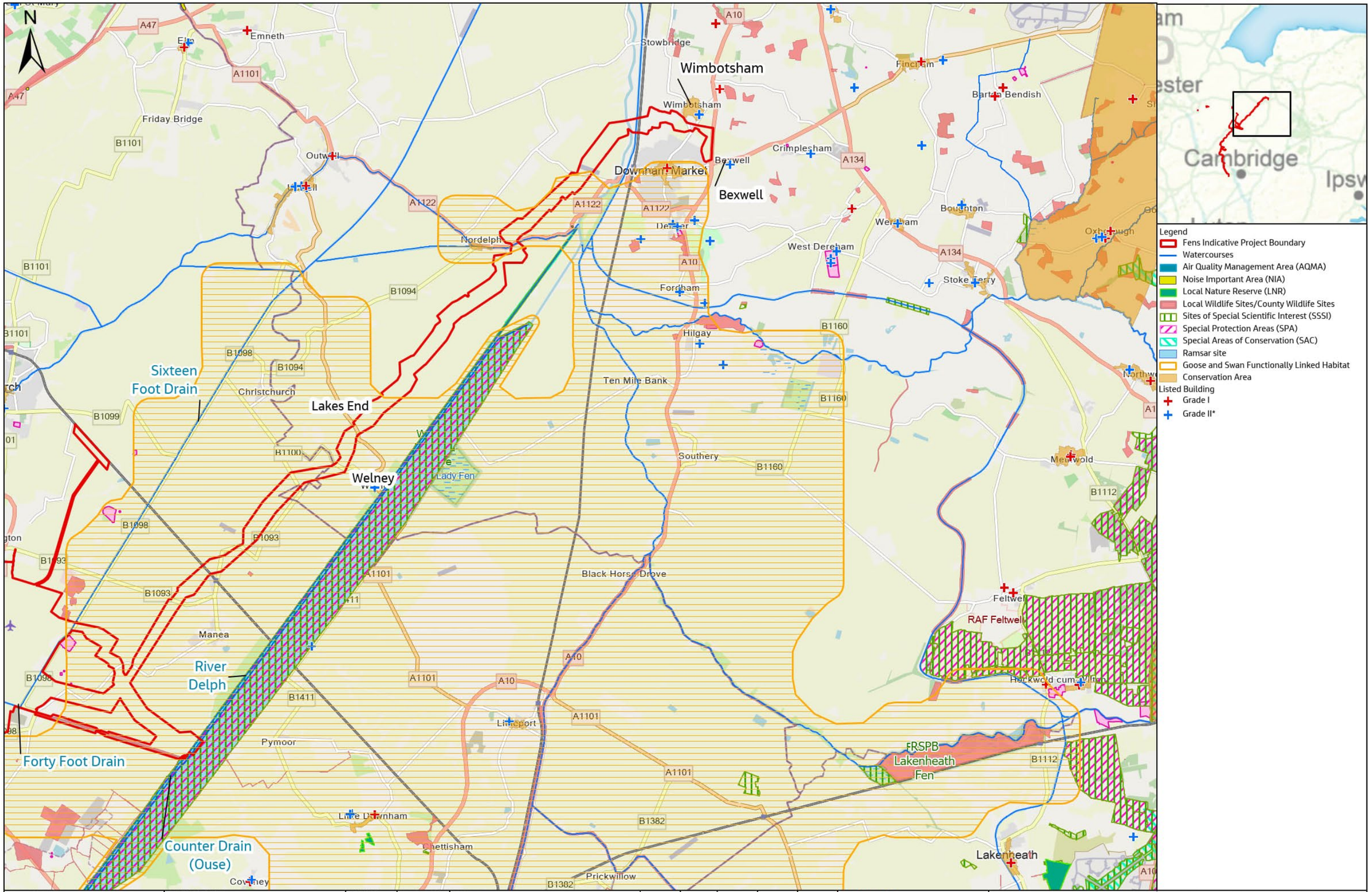
Cambridge Water

love every drop anglianwater



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P02	REVISED ISSUE	14/08/2025	TR
P03	REVISED ISSUE	19/08/2025	TR

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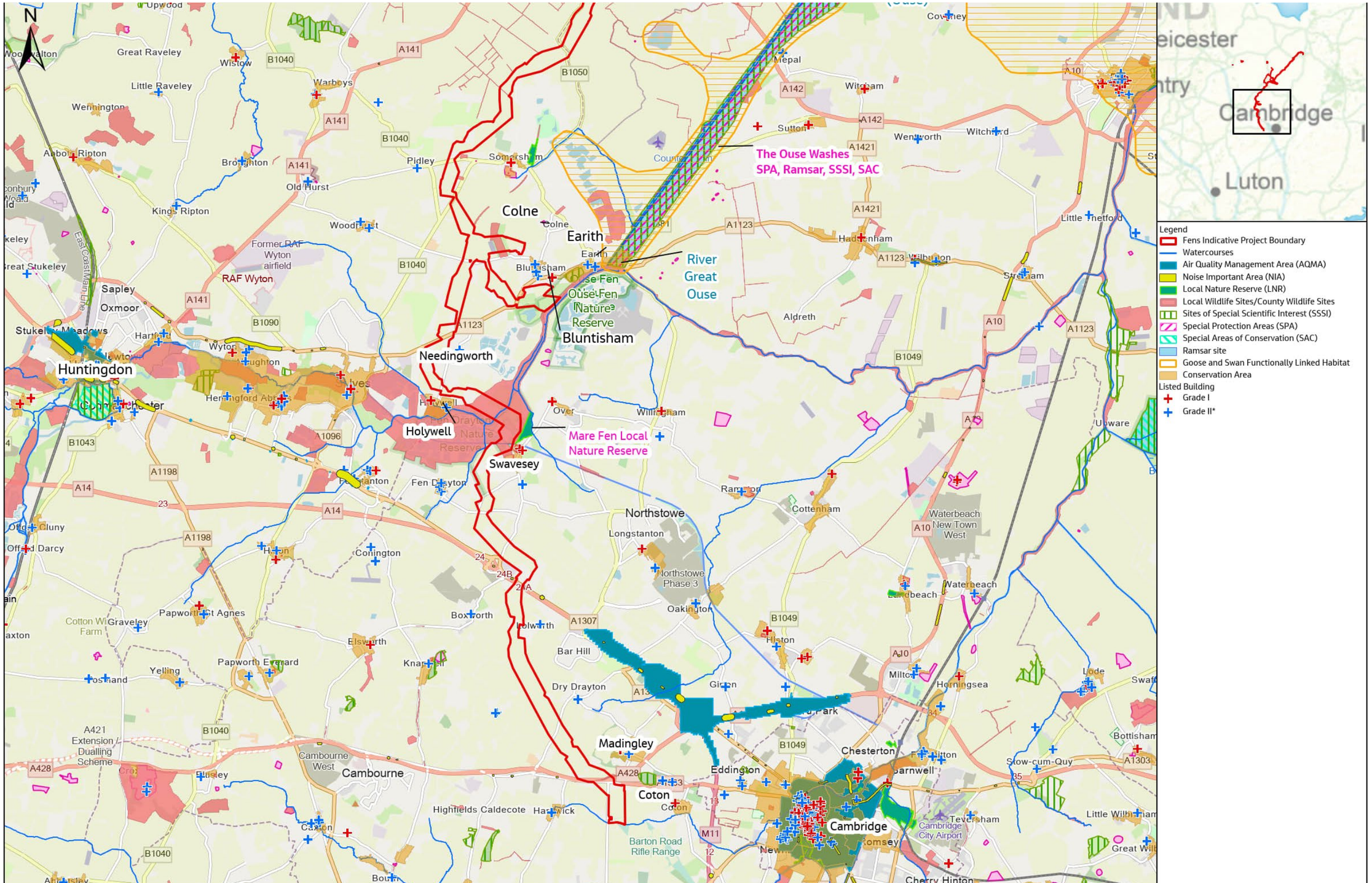

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Appendix A Indicative construction management methods

A.1 As set out in Chapter 3 of this SEIR, relevant management plans will be developed and submitted as part of the DCO application. These will support the responsible delivery of the Project, secure commitments, and set consistent approaches to avoiding or reducing adverse impacts. These management plans will be developed in consultation with local authorities and relevant stakeholders as the EIA progresses, and further information will be presented at future consultation phases. At this stage, the typical elements and measures likely to be included in the relevant management plans are set out in Table A-1:below.

Table A-1: Potential mitigation measures likely to be included in management plans

Category	Aspect	Examples of mitigation measures that are being considered
General requirements	General measures	• Relevant documents and management plans would be produced to set out the standards of work to be applied during the operational and construction phases which monitor, manage, and control potential adverse environmental effects associated with construction, operation and maintenance activities.
Impacts on people and the environment	Air quality	• Visual and/or quantitative dust monitoring during construction activities. • Erecting solid screens or barriers around dusty activities or the site boundary. • Switching off engines of vehicles and plant when stationary or not in use – no idling plant or vehicles. • Avoiding the use of diesel or petrol-powered generators and instead using mains electricity, battery or 'low emission' powered equipment where practicable. • Damping down friable surfaces in dry/windy weather for effective dust/particulate matter suppression. • Splitting construction traffic over multiple routes and specifying emissions standards to be met by construction vehicles where practicable.
Effects on people and the environment	Noise and vibration	Reduction of noise at point of generation and containment of any noise generated. Examples may include: • Heavy plant and equipment would comply with the noise limits outlined in the relevant European Commission Directive 2000/14/EC which is enacted in the Noise Emission in the Environment by Equipment for use Outdoor Regulations 2001 (SI) 2001/1701. • All heavy plant and equipment fitted with noise abatement covers, would not be operated with noise abatement covers open or removed. • Vehicles and mechanical plant employed for any activity associated with the construction works would be fitted with effective exhaust silencers/suppression equipment. • Heavy plant, equipment and vehicles in intermittent use would be shut down or throttled down to a minimum during waiting periods as far as is practicable. • Noise from reversing alarms would be limited by designing circulation routes to avoid the need for vehicles to reverse as far as practicable, using banksmen where appropriate. To reduce noise, reversing alarms fitted to all vehicles would incorporate one or more of the following features: - highly directional sounders

Category	Aspect	Examples of mitigation measures that are being considered
		- broadband or warbling signals - self-adjusting output sounders (also known as 'smart sounders') - flashing lights. • Use of materials which reduce noise, such as absorptive materials within buildings, or materials with better acoustic insulation properties to reduce noise breakout from buildings. • Provision of adequate distance in the lay-out structure, between source and noise-sensitive receptors including outdoor amenity areas. • Incorporation of good design measures to reduce noise transmission through screening by natural or purpose-built barriers or buildings. • Restriction of activities allowed on site during construction, such as specifying acceptable noise limits or times of use. • Review of plant and equipment requirements and seeking of opportunities to reduce noise by best practicable means. • Update construction noise modelling and mitigation measures following DCO consent and throughout the construction period to reflect the evolving plant list, programme and working method information. This would be achieved by requiring the appointed contractor(s) to submit Control of Pollution Act 1974 (as amended) Section 61 Prior Consent applications and/or detailed noise and vibration management plans for packages of works, to the local planning authorities for review. • Undertaking community liaison about the nature of noise and vibration effects, and the mitigation measures that would be put in place. • Considerate working practices and behaviours would be communicated to the workforce through, at a minimum (but not restricted to): site inductions, shift briefings and toolbox talks. Measures to reduce construction traffic noise and vibration impacts such as routing of HGVs to avoid receptors, splitting construction traffic between multiple routes and timing construction traffic to avoid the more sensitive times of day. • Works outside of core daytime working hours would be subject to more stringent noise controls and additional mitigation would be included as appropriate.

Category	Aspect	Examples of mitigation measures that are being considered
Impacts on people and communities	Traffic and transport	• Construction phase traffic management plans to include details of measures to control (e.g., routing and timing restrictions), monitor and enforce construction traffic movements. • Implementation of highway improvements where necessary, such as minor highway works to lower category roads to facilitate two-way vehicle movement (passing bays and widening on bends). • Construction phase management plans to maximise the use of sustainable transport modes to reach construction areas. • Shift timings for construction workers to ensure commuter travel occurs outside of peak hours on the highway network. • HGV movements timed to be spread across the working day, and if necessary to overcome sensitive locations, restricted to avoid specific periods of the day.
Impacts on people and communities	Access and amenity	• Regular communication with local communities and relevant stakeholders regarding planned closures and diversions of routes used by motorised vehicles, walkers, cyclists and horse riders; and provision of reasonable alternatives.
Impacts on people and communities	Socio-economics and community	• Development of a socio-economic strategy to increase employment opportunities and upskilling of certain groups within the community. • Implementation of a programme for community liaison, e.g. establishment of a dedicated community liaison team to act as a bridge between the Project and local residents. • Support to mitigate negative impacts on businesses and residential communities as a result of the loss of assets, e.g. initiatives in training, education and skills development.
Impacts on people and communities	Human health	• Provision of a forum for communities to put forward their concerns and recommendations, supporting participation in the process. • Provision of information so that communities better understand the proposals, including issues of risk and safety measures. • Continued engagement and support for landowners and other individuals who would be directly affected by the Project. • Good practice construction measures to break source-pathway-receptor links between environmental hazards and human health receptors.

Category	Aspect	Examples of mitigation measures that are being considered
Impacts on the natural environment	Terrestrial and aquatic biodiversity	• Appropriate mitigation strategies for legally protected species found to be present, would be developed in consultation with Natural England. • Trenchless pipeline installation techniques would be used in certain locations, to avoid sensitive areas. • Adherence to guidance for pollution prevention to avoid potential adverse impacts to the water quality of watercourses and water bodies. • Where there is a risk of animal entrapment, a means of escape would be installed into all excavations left open overnight. • Timing of works to avoid sensitive periods where feasible to do so, e.g. the hibernation period for amphibians and reptiles and the migratory and spawning period for fish. • Any works during the fish spawning seasons would be consulted upon with the Environment Agency. • Supervision by experienced Ecological Clerks of Work to identify and avoid sensitive terrestrial and aquatic habitats and ensure that mitigation measures are implemented for all biodiversity receptors including protected species. • Identification and implementation of bespoke measures to control the spread of invasive species. • Where possible, reinstatement of hedgerows and trees would use the same or similar species to those removed.
Impacts on people and the environment	Landscape and visual	• Construction lighting layout and specification designed in accordance with current good practice to reduce potential adverse impacts of light spill. • Retention and protection of existing vegetation to be in accordance with the recommendations in BS 5837:2002 Trees in Relation to Design, Demolition and Construction (British Standards Institution, 2012). • Where vegetation cannot be replaced due to operational or safety constraints on planting near structures, replacement vegetation to be planted as close by as practicable. Replacement vegetation to be designed to complement landscape character and to be sympathetic to the local habitat type in order to provide a high biodiversity value. • Design of hard landscaping and above ground features such as buildings and fencing, to use materials and finishes that complement local landscape character.

Category	Aspect	Examples of mitigation measures that are being considered
		• Landscape areas to be managed in accordance with accepted good practice and in line with the requirements of a landscape management strategy for the Project.
Impacts on people and the environment	Geology, soils, agriculture and land quality	• Avoidance and/or protection of sensitive land use areas, strata or contamination sources and design features including bunding of tanks. • Reuse of high-grade soil and peat from beneath the reservoir or other areas in landscaping to avoid and reduce the loss of soil resources, including functions such as soil biodiversity, ecosystem support and soil carbon storage. • Implementation of management plans encompassing good practice measures, such as separate storage of topsoil and subsoil, restricting soil handling during wet periods, use of tracked/low ground pressure vehicles and appropriate segregation of soil types and horizons. • Avoidance or minimisation of land parcel severance by locating Project components near field boundaries where practicable.
Impacts on the natural environment	Water resources and flood risk	• Stockpiles would located outside Flood Zone 3 where possible. • Where required, compensatory storage provided in gravity-drained areas away from flood defences. • Where required, diversion of flow paths and conveyance measures in pumped catchments and/or attenuation measures. • Minimisation of obstruction of flood water, flood flow diversion to areas of water-compatible activities within the boundary of the Project, flood defence and/or channel improvements, and internal drainage measures. • Alternative drainage routes established before construction commences in areas where the removal of existing drainage channels would isolate upstream drainage. • Requirement for site runoff from construction compounds and active construction sites, dewatering from excavations, and road runoff from haul roads and commissioning flows to be intercepted, attenuated and treated such that they do not increase flood risk and have low sediment content and suitable water quality. • Groundwater monitoring prior to and during construction to inform mitigation for any changes in groundwater levels during construction and avoid dewatering of organic deposits.

Category	Aspect	Examples of mitigation measures that are being considered
		• Bunding of excavated soil and material stockpiles would be incorporated into construction site sustainable drainage systems, e.g. settlement and detention basins, ditches, treatment facilities etc. • Prevention of leakage of fuels and oils using adequately sized secure storage. • Maintenance of suitable exclusion zones from watercourses and ponds. • Provision of adequate protection of any monitoring stations or boreholes. • Incorporation of flood risk management measures within construction management documents. • Use of silt booms and/or flumes as appropriate, isolation of construction areas using temporary sheet piling and temporary diversion of watercourses during construction.
Impacts on the historic environment	Historic environment	• Use of buffer or exclusion zones to demarcate areas of known archaeological and historical interest and/or the setting of heritage assets. • Noise fencing or directional lighting to avoid and reduce potential adverse effects on the setting of heritage assets. • Preservation-by-record measures, such as excavation and monitoring activities for archaeological remains, where required.
Project-wide impacts	Material assets and waste	• Pre-cast elements would be used to allow efficient use of materials and mostly avoid waste arisings from off-cuts. • Suitable excavated material would be reused in the construction of the Project where feasible. • Pipelines installed using open cut methods, with arisings processed and reused as backfill, where practicable. • Source all non-specialist, bulk earthworks materials for the permanent works (embankment and landscaping) of the reservoir on site from borrow pits within the footprint of the reservoir, with no requirement for import. • Reuse surplus construction materials (especially aggregates) for habitat creation (for example, building hibernacula). • Temporary stockpiling of fill materials, prior to incorporating into the Project, would be reduced where practicable, to prevent double handling and reduce damage, and thereby, waste generation.

Category	Aspect	Examples of mitigation measures that are being considered
		• Chipping green waste on site for use in the landscaping for the Project. • Provide on-site facilities to segregate waste streams, to enable materials to be kept at their highest value through reuse, recycling or recovery. • Recycling of inert materials by crushing, blending and subsequent reuse as an aggregate (an example of use would be for pathways). • All contaminated/hazardous waste (including soil) would be stored separately to any non-hazardous material to avoid cross-contamination. • Waste arisings sent off site for recovery or disposal would only be conveyed by an authorised waste contractor.
Project-wide impacts	Carbon and greenhouse gases	• Alignment with Construction Leadership Council's Five Client Carbon Commitments (5CCC) (2024) and PAS 2080:2023 (British Standards Institution, 2023). • Procurement and supply chain commitments from suppliers to allow for the greatest ability to mitigate carbon emissions, with the need to review and deliver opportunities to switch to lower carbon intensity materials and processes and improve the efficiency of Project delivery embedded into the future procurement process and contracts.
Project-wide impacts	Climate resilience	• Use of passive ventilation, natural cooling and thermal insulation for heat-vulnerable assets; and leaving space to install targeted air-conditioning units in future decades. • Measures to reduce the likelihood and effects of algal blooms and low levels of dissolved oxygen in water . • Selecting suitable plants to minimise vegetation dieback. • Assessing and amending the design to minimise risks from future intense rainfall penetrating surface cracks in embankments, where needed. • Planting drought-resilient species to help stabilise embankment surfaces. • Using flood modelling to design water-vulnerable assets to be above projected flood levels. • Design out risks of water ingress into buildings and electrical equipment by raising equipment or selecting electrical components with an appropriate Ingress Protection rating. • Designing to provide flood resilience for key access routes. • Designing assets with wind loading and lightning protection, where required.

Category	Aspect	Examples of mitigation measures that are being considered
		• Designing back-up and safe shutdown systems for relevant assets and the inclusion of local power supplies for the site. • Designing freeboard into reservoir water levels to allow for higher winds and waves. • Using vegetation to create naturally cool environments around the reservoir site. • Using thermal insulation in the visitor centre. • Leaving space to install shading canopies.

Appendix B Our approach to other assessments

Appendix B provides factsheets setting out our approach to environmental assessments, that are not already included within our ongoing environmental impact assessment (EIA) process, but are required through other environmental assessment regimes. The factsheets included in Appendix B are listed below. These factsheets are aimed at a non-technical audience to provide a summary of some of the in-depth technical work that is being undertaken by our teams, including engagement with regulatory bodies and technical specialists within stakeholder organisations.

- Appendix B.1 - Our approach to Habitats Regulations Assessment
- Appendix B.2 - Our approach to Water Framework Directive assessment
- Appendix B.3 - Our approach to Equalities Impact Assessment
- Appendix B.4 - Our approach to Environmental Net Gain
- Appendix B.5 - Our approach to Habitat Design and Biodiversity Net Gain

1 Appendix B.1 - Our approach to Habitats Regulations Assessment

1.1 Introduction

1.1.1 Protecting European designated sites is a fundamental part of our decision making and you can read more about our approach to the environment in the Supporting Environmental Information Report.

1.1.2 This factsheet provides a summary of our approach to Habitats Regulations Assessment (HRA) and how we are assessing the potential risks to and opportunities for European designated sites from the development of the Fens Reservoir.

1.2 Our approach to HRA

1.2.1 At every stage of planning and developing the Fens Reservoir, we are embedding the HRA process into our decision making. Our approach is proactive, evidence-led, and collaborative. We begin by identifying potential impacts on European designated sites early in the project lifecycle, allowing us to shape design and mitigation strategies from the outset.

1.2.2 We are working closely with Natural England, the Environment Agency, and other key stakeholders to ensure that our assessments are robust and transparent. This includes sharing data, aligning on methodologies, and integrating feedback into our evolving plans. By doing so, we aim not only to meet regulatory requirements but to uphold the highest standards of environmental stewardship.

1.3 What is HRA?

1.3.1 HRA refers to several stages (refer to HRA process below) of assessment which must be undertaken to ensure that the Project meets the requirements of The Conservation of Habitats and Species Regulations 2017 (The Habitats Regulations).

1.3.2 The purpose of the Habitats Regulations is to ensure that the Project does not prevent the achievement of the conservation objectives of European designated sites.

1.3.3 European designated sites include Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). An HRA is also required for Ramsar sites and potential SACs or SPAs. Each of these sites is designated for its qualifying features, which are either habitats or species. Each qualifying feature has several conservation objectives that have been set by government to ensure the conservation of the habitats and species.

1.3.4 An HRA assesses whether there would be adverse effects on the integrity of a European designated site considering the conservation objectives. The Habitats Regulations prevent authorisation of any project that cannot demonstrate there are no adverse effects on integrity. The exception is where a derogation is granted. This is explained further below.

1.3.5 The HRA can also identify potential positive effects as well as adverse effects, where a project would support the achievement of the conservation objectives.

1.3.6 The HRA focuses specifically on effects on European designated sites and supplements the wider Environmental Impact Assessment (EIA) process, which considers, amongst other things, implications for wildlife and species and on other ecologically designated sites, such as Sites of Special Scientific Interest (SSSI).

1.3.7 Potential effects (changes in environmental conditions) from the Project, that are considered in the HRA, include:

- changes in habitat area
- changes in surface water
- changes in hydromorphology
- changes in groundwater
- changes in water quality
- changes in air quality
- disturbance to qualifying features
- physical interaction with qualifying features
- spread of Invasive Non-Native Species.

1.4 The HRA process

1.4.1 The HRA can involve three stages (depending on the conclusions reached at each stage) that must be followed sequentially:

- Stage 1 Screening: to determine if the project is likely to have a significant effect, either alone or in combination with other plans or projects. If likely significant effects cannot be discounted, it is necessary for the HRA to progress to the next stage.
- Stage 2 Appropriate Assessment: to assess the effects of the project and determine if there are adverse effects on the integrity of any European site, either alone or in combination with other plans or projects. If adverse effects on integrity can be discounted, then the HRA can be completed at stage 2 with the HRA report providing the information to allow the competent authority to fulfil its obligations under Regulation 63(1). However, if adverse effects on integrity cannot be discounted, or there is uncertainty, it is necessary for the HRA to progress to the next stage.
- Stage 3 HRA derogation: If a project is to be authorised despite a negative assessment at stage 2, a derogation would be required under Regulation 68, which requires three legal tests to be met so that a derogation can be granted:
  - Alternative solutions. It must be demonstrated there are no feasible alternative solutions.

- Imperative reasons of overriding public interest. It must be demonstrated that the project needs to be carried out for imperative reasons of overriding public interest.
- Compensatory measures. It must be demonstrated that compensatory measures are secured to ensure the overall coherence of the network of European sites in the UK is protected.

1.4.2 A timeline of the planned HRA assessments is outlined below:

- 2024: We shared preliminary HRA screening assessment conclusions and our proposed HRA methodology with regulators to seek their advice. The preliminary screening assessment work helped determine whether a more detailed assessment of potential impacts on protected nature sites would be necessary.
- 2025: We are continuing to refine the HRA screening assessment and develop our evidence plan, considering feedback from regulators and relevant stakeholders. While we aim to finalise these documents by the end of 2025, further updates will be needed into 2026.
- 2026: We will begin the stage 2 appropriate assessment in 2026, once we have more certainty on the screening and methodological approach, as well as more details of the Project and the ongoing design development.

1.5 Key HRA principles

1.5.1 The key HRA principles we follow are:

- to assess all possible effects of the Project on European sites' qualifying features including direct, indirect, temporary and permanent effects through construction and operation phases
- to demonstrate the effects, whether adverse, neutral or beneficial to the achievement of the conservation objectives, beyond reasonable scientific doubt
- to integrate the assessment with the development of the Project design and construction proposals to ensure adverse effects can be avoided through good design and mitigation measures
- to engage with Natural England, the Environment Agency and relevant stakeholders to ensure their advice is considered in our approach to the Project and the HRA.

1.6 Next steps

1.6.1 The HRA will evolve alongside the Project design, informed by ongoing input from regulators and stakeholders. We will continue to:

- collect evidence to support the assessment through desk studies, surveys and modelling, in accordance with the evidence plan

- engage with Natural England, the Environment Agency and other relevant stakeholders
- submit our report to inform an HRA.

2 Appendix B.2 - Our approach to Water Framework Directive assessment

2.1 Introduction

2.1.1 Protecting the water environment is a fundamental part of our decision making and you can read more about our approach to the environment in the Supporting Environmental Information Report.

2.1.2 This factsheet provides a summary of our approach to the Water Framework Directive (WFD) assessment and how we are assessing the potential risks to and opportunities for the water environment from the Project.

2.2 Our approach to WFD assessments

2.2.1 Throughout every stage of planning and developing the Fens Reservoir, we are committed to ensuring that the water environment is meaningfully integrated into our decision making and design.

2.2.2 We work collaboratively with technical specialists and regulators to ensure our methodologies are robust, evidence-led, and aligned with current guidance.

2.2.3 We tailor our WFD assessment to reflect the specific characteristics of the water environment, including hydrology, water quality, and ecological sensitivity. This includes baseline data review, analysis and modelling, and identifying opportunities for mitigation and enhancement.

2.2.4 Where appropriate, we align our WFD work with other environmental assessments such as HRA and EIA, ensuring consistency and efficiency across regulatory processes. Our goal is to deliver infrastructure that not only complies with WFD requirements but contributes positively to the health and resilience of water ecosystems.

2.3 What is a WFD assessment?

2.3.1 The WFD assessment refers to several stages (refer to WFD process below) of assessment which must be undertaken to ensure that the Project meets the requirements of the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017.

2.3.2 The purpose of the Habitats Regulations is to protect and improve the water environment. The WFD requires all water bodies, both surface water (including canals, lakes, coastal and transitional water bodies) and groundwater (water which passes through the ground and can support river flows, ecosystems and provide a source of drinking water), to achieve ‘good status or potential’. This is to enhance the water body status and prevent further deterioration in environmental characteristics as the result of development.

2.3.3 A WFD assessment determines if a project could affect critical environmental characteristics that support the ecological value and water quality of a water body.

2.3.4 The WFD assessment looks for both positive improvements as well as potential adverse effects. The WFD assessment focuses specifically on effects across the whole water body and supplements the wider EIA process, which considers the effects of the project on environmental receptors.

2.3.5 For surface water, the assessment considers potential impacts and benefits on:

- biology of the river (including fish, plants and smaller invertebrates)
- river flow which supports biology
- water quality which supports the biology
- the shape and structure of the riverbed and banks and how water moves through the system
- presence of pollutants and chemicals.

2.3.6 For groundwater the assessment considers:

- the quantity of water available and whether there is sufficient water to support dependent watercourses and wetlands
- the presence of pollutants and chemicals.

2.4 The WFD process

2.4.1 The WFD assessment has four stages:

- Screening: To determine whether a proposed activity is likely to cause deterioration or prevent improvement of a water body's status and therefore where it needs to be considered further in the assessment.
- Scoping: To define the activities which may impact on water bodies and where they will take place and agree the scope of further assessment with consultation bodies.
- Impact Assessment: considers and assesses the potential impacts or benefits of the activities and identifies ways to avoid, minimise or mitigate any impacts.
- Derogation: where adverse effects cannot be ruled out then the proposal may be allowed if a derogation is granted. Certain legal tests must be met to demonstrate that there are no better environmental alternatives, that there is an overriding public interest, that the benefits from the scheme outweigh the benefits of achieving environmental objectives and that all possible mitigation has been applied.

2.4.2 It may not be necessary to apply all these stages, depending on the conclusions reached at each stage. The decisions and conclusions of these assessments are developed in consultation with the Environment Agency.

2.4.3 A timeline of the WFD assessment work undertaken so far and the further work planned, is outlined below:

- 2021: Preliminary WFD assessment of the reservoir site only.

- 2023: Preliminary assessment of the whole Project preliminary design. This includes the associated water infrastructure including pipeline transfers and water treatment works.
- 2026: An updated assessment of the whole Project following updates to design and latest detailed assessment results.

2.5 Key WFD principles

2.5.1 The key WFD principles we follow are:

- to assess all possible effects of the Project on water bodies including impacts which are direct, indirect, temporary and permanent
- to consider the potential for combined effects from other future projects on the same water bodies
- to influence the design of the Project to avoid impacts or mitigate them through embedded mitigation measures
- where impacts cannot be mitigated, to offset impacts by improvements made elsewhere within the water body
- to engage with the Environment Agency as the regulator and ensure their advice is fully considered in our approach
- to provide robust reasons and evidence for our decisions.

2.6 Next steps

2.6.1 The WFD assessment will continue to progress as the design proposals are developed. We will continue to:

- collect data through surveys, monitoring and modelling, where required, to make our assessments robust and representative of 'real time' conditions
- develop our WFD assessment as the design is progressed and more data becomes available
- engage with the Environment Agency and other relevant stakeholders on the outcomes of the assessments
- submit our WFD Report as part of the Development Consent Order (DCO) application.

3 Appendix B.3 - Our approach to Equalities Impact Assessment

3.1 Introduction

3.1.1 Promoting equality and fostering inclusive outcomes are central to how we plan, design, and deliver the Fens Reservoir.

3.1.2 This factsheet outlines our approach to the Equality Impact Assessment (EqIA) - a key tool we use to understand and address the potential impacts of our proposals on people and communities, especially those with legally protected characteristics under the Equality Act 2010.

3.1.3 The EqIA will form part of our Development Consent Order (DCO) application and contributes to ensuring that our project is inclusive, accessible, and fair for everyone.

3.2 What is an EqIA?

3.2.1 An EqIA is a systematic assessment of how a proposed project or policy may affect people differently based on protected characteristics. These characteristics, as defined in the Equality Act 2010, include:

- Age
- Disability
- Gender reassignment
- Marriage and civil partnership
- Pregnancy and maternity
- Race
- Religion or belief
- Sex
- Sexual orientation.

3.2.2 The EqIA supports our compliance with the Public Sector Equality Duty, which is outlined in Section 149 of the Equality Act 2010. This duty requires us to give due regard to the need to:

- eliminate unlawful discrimination, harassment and victimisation
- advance equality of opportunity between different groups
- foster good relations between people from different backgrounds.

3.2.3 Anglian Water is subject to the Public Sector Equality Duty because of the public functions it performs as a statutory undertaker, including the provision of water supply and wastewater services. This means that in developing the Fens Reservoir,

Anglian Water must consider how its decisions and activities may affect people with protected characteristics and take steps to advance equality and eliminate discrimination.

3.3 The purpose of the EqIA

3.3.1 The purpose of the EqIA is to help us:

- Identify how the Fens Reservoir development may impact people with protected characteristics – positively or negatively.
- Consider the cumulative effects alongside other developments.
- Integrate equality considerations into project design and delivery from the outset.
- Inform decisions that contribute to a fairer, more inclusive infrastructure project.

3.3.2 The EqIA goes beyond compliance – It is a proactive tool to ensure our Project serves diverse communities and minimises barriers for those most at risk of disadvantage.

3.3.3 Unlike the EIA, the EqIA does not assess the significance of effects. Instead, it focuses on identifying whether there are likely differential or disproportionate impacts on people with protected characteristics.

3.4 Potential equality impacts of the Fens Reservoir

3.4.1 The EqIA will consider a broad range of potential equality-related effects during both the construction and operation phases. These include:

- access to community facilities, public services and green spaces.
- physical accessibility and inclusive design of paths, signage and infrastructure
- potential relocation or disruption of groups or activities that serve protected communities
- effects on employment and training opportunities, particularly for underrepresented groups
- impacts on travel, mobility, and personal safety
- social cohesion and community wellbeing
- both direct and indirect, temporary and permanent effects.

3.4.2 These potential effects will be analysed using evidence from environmental studies, stakeholder engagement, demographic data and consultation responses.

3.5 The EqIA process

3.5.1 The EqIA will be developed in phases aligned with the overall Project timeline. It will follow a structured process including:

- Baseline analysis – Using local data and community insights to understand the current situation
- Assessment of impacts – Identifying potential positive or negative effects
- Development of mitigation and enhancement measures – Proposing actions to reduce disadvantage or increase inclusivity
- Ongoing monitoring – Establishing processes to track outcomes and respond to unforeseen impacts.

3.5.2 The findings of the EqIA will directly inform Project design and mitigation proposals and will be submitted as part of the DCO application.

3.5.3 The EqIA process is developed in parallel with the EIA and is informed by a range of EIA topics such as Socio-economics and Community, Access and Amenity, Noise and Vibration, Traffic and Transport and Human Health, to ensure that equality considerations are integrated into the overall design and assessment of the Project.

3.6 Key EqIA principles

3.6.1 Our approach to EqIA is underpinned by the following principles:

- Inclusion by design – We aim to integrate inclusive thinking into all aspects of design, delivery and long-term operation.
- Evidence-based – We will use quantitative and qualitative data, including lived experiences, to inform our assessments.
- Proportionality – We will focus on the most relevant and significant equality impacts, without overlooking minority groups.
- Transparency – Our EqIA process is open and shaped by engagement with affected communities.
- Responsiveness – We will update our EqIA in light of new information and changing Project details.

3.7 Next steps

3.7.1 The EqIA will continue to evolve in parallel with the Project, with further opportunities for public and stakeholder input. We will:

- conduct additional community engagement with groups representing protected characteristics.
- finalise mitigation and enhancement measures to support inclusivity.
- submit the final EqIA with our DCO application.
- develop a framework for post-application monitoring of equality outcomes.

3.7.2 Your feedback is welcome and vital to shaping a Project that works for everyone.

4 Appendix B.4 - Our approach to Environmental Net Gain

4.1 Our approach to Environmental Net Gain

4.1.1 We understand that the Fens Reservoir project is about more than just securing a long-term water supply – it's also a unique opportunity to deliver broader environmental and community benefits. These include:

- creating a vibrant destination for local communities to enjoy nature and recreation, with potential to support the local economy
- providing a sanctuary for wildlife while easing pressure on other sensitive water environments
- enhancing climate resilience by helping to manage drought and river flows.

4.1.2 Our approach to delivering these benefits is guided by the principle of Environmental Net Gain (ENG). Our approach complies with the National Policy Statement for Water Resources Infrastructure (Defra, 2025a), which requires that ENG is considered and environmental gains are sought as part of delivering a project.

4.1.3 This factsheet outlines our ENG strategy, the steps we're taking to implement it, and how it is shaping the design of the Fens Reservoir to ensure long-term positive outcomes for people, nature and place.

4.2 What is Environmental Net Gain?

4.2.1 ENG is an approach to managing nature (land, water and habitats) in such a way that wider benefits are improved. The approach builds on Biodiversity Net Gain (BNG), the requirement for developments to increase biodiversity by at least 10 per cent, and thus benefits nature (further information on BNG is provided in Appendix B.5). An ENG approach seeks to go a step further by using nature enhancements as a means for:

- Maximising ecosystem service benefits – These are services that benefit humans. Examples include trees cleaning our air, wetlands preventing floods and purifying our water, bees pollinating crops, and green spaces providing access to recreation – all vital for our survival and well-being.
- Managing environmental pressures – These are pressures and threats to nature, which may limit its ability to provide wider benefits. Examples include habitat loss due to land use change, extraction of materials from the environment, and the disruption to ecology due to climate change and pollution. Through enhancements to nature, we may be able to limit or reverse some of these pressures.

4.3 Embedding Environmental Net Gain

4.3.1 ENG is embedded within the Fens Reservoir design through the following steps.

Strategy development

4.3.2 A strategic approach has been developed for the Fens Reservoir, outlining our interpretation of ENG, the guiding principles for its application, and importantly, a set of priorities. Recognising that it's not always possible to enhance all ecosystem services equally, the approach identifies those services most critical to the Fens Reservoir and the local context. This prioritisation is intended to support informed decision making where trade-offs may be necessary:

- Water supply.
- Air pollutant removal.
- Climate regulation.
- Flood regulation.
- Water purification.
- Recreation.
- Health and wellbeing.
- Sustainable food production.

Supporting informed decision making

4.3.3 We're applying an ENG-led approach to guide decision making on key aspects of the design. This includes areas such as habitat creation, soil management strategies, master-planning, and decisions involving significant changes to land use.

Supporting studies

4.3.4 Where design decisions have significant implications for ENG, we're ensuring these are properly assessed to understand their impact on broader benefits. Risks and opportunities are being actively considered. To support this, we're using science-based methods aligned with best practice guidance including Defra's Enabling a Natural Capital Approach (ENCA) guidance (2023a), to present the outcomes.

4.4 Our Environmental Net Gain statement

4.4.1 As part of our Development Consent Order (DCO) application, we will develop an ENG statement that shows how ENG has shaped decision making to deliver outcomes which provide lasting social, economic and environmental benefits. Final outcomes will be reported across the key components of ENG: BNG, ecosystem services and environmental pressures.

4.4.2 The statement will also outline how ENG will be monitored and reported on during both the construction and operational phases of the Project. This will help ensure that the design efforts aimed at enhancing wider benefits translate into long-term value on the ground.

4.5 Next steps

4.5.1 We are continuing to shape design decisions using an ENG approach. We will continue to:

- measure and record the outcomes for ENG of relevant design decisions to support the delivery of wider benefits
- contribute to industry initiatives and concepts and help shape emerging policy in this evolving field
- stay informed on emerging ENG outcomes for the Project and use these insights to guide and refine design advice.

5 Appendix B.5 - Our approach to habitat design and Biodiversity Net Gain

5.1 Introduction

5.1.1 Habitat design and Biodiversity Net Gain (BNG) are important components of the Fens Reservoir Project, aimed at delivering ecological and broader environmental mitigation and enhancement. The goal is to ensure that we leave the natural environment in a better state than before. You can read more about our approach in the Supporting Environmental Information Report.

5.1.2 This factsheet outlines our approach to Habitat Design and BNG detailing how we intend to create, enhance, restore or protect natural environments to support targeted species and ecosystems while also delivering broader environmental benefits.

5.2 Our approach to BNG

5.2.1 Our approach ensures that habitat design is thoughtfully embedded in decision making, serving as a central element within a collaborative, interdisciplinary environmental design team. We are working to identify and secure the best outcomes for biodiversity, and deliver wider environmental benefits while ensuring alignment and/or compliance with a complex range of interrelated strategic and legislative factors.

5.3 What is BNG?

5.3.1 BNG is a development approach that leaves biodiversity in a better state than before. The Environment Act 2021 brought into law a mandatory Biodiversity Gain Objective (BGO) for developments. This states that developments must deliver at least a 10 per cent increase in biodiversity value relative to the pre-development biodiversity value of the onsite habitat. BNG is expected to become mandatory for projects being consented through the DCO regime like the Fens Reservoir Project in May 2026 (HM Government, 2025) which means it will be a statutory requirement by the time we submit our DCO application. Guidance for how BNG will apply to DCO projects is expected soon, and the ongoing development of the Project will have regard to this guidance.

5.4 The habitat design and BNG process

5.4.1 Achieving BNG goes beyond simply offsetting losses with gains. It involves maximising opportunities through thoughtful design to minimise impacts, embed ecological enhancements, and prioritise the prevention of biodiversity loss from the outset. BNG should help inform option selection and design development to improve the environmental outcomes of the proposed development. This approach, if done well, will be key to the good design and delivery of the Project. Habitats delivered under BNG should achieve long-lasting and meaningful benefits for our environment, society and economy.

5.4.2 The design selection and development process for the Fens Reservoir Project will:

- follow the Project approach to habitat and BNG delivery, as detailed in the next section
- deliver a legally compliant BNG proposal to support the DCO application
- meet and where practicable, exceed the statutory 10 per cent BNG target, with a preference for on-site delivery (within the DCO boundary). Where this is not feasible, off-site areas shall be identified or BNG credits secured, as appropriate
- work with landowners and other stakeholders to help support their priorities for nature conservation, for example through supporting Local Nature Recovery Strategies (Defra, 2023b)
- engage with Natural England, the Environment Agency and other relevant stakeholders to ensure their advice is considered as part of our approach
- ensure appropriate funding and legal agreements are secured for habitat creation, establishment, management, monitoring and any remedial measures required.

5.5 Project approach to habitat and BNG delivery

5.5.1 Our approach to habitat and BNG delivery is summarised in the section below. The approach aligns with the rules and principles, as defined in the Statutory Biodiversity Metric User Guide (Defra, 2025b); the Biodiversity Net Gain: Good Practice Principles (CIRIA, 2019); the Biodiversity Gain Hierarchy and the BNG requirements as stated in the National Policy Statement (NPS) for Water Resources Infrastructure (Defra, 2025a).

5.5.2 Below, we outline how our habitat design approach aligns with the rules and principles of BNG:

- Avoid impacts and incorporate improvements. Focus on avoiding or minimising impact on higher-value biodiversity areas and incorporate improvements. Use habitat value plans and species-specific models for decision making.
- Local to impacts: Deliver BNG within the DCO boundary where possible. Prioritise BNG delivery within the same Local Planning Authority, National Character Area or waterbody catchment.
- Support Local Nature Recovery Strategies (LNRS): The Project is mainly covered by the LNRS for Cambridgeshire and Peterborough. We will look to prioritise habitat creation which aligns with the LNRS actions.
- Timing of BNG delivery: The metric rewards habitat creation in advance of construction and penalises any delay in habitat creation. This could be a key challenge for this Project, given the long timescales associated with the construction of the reservoir. We will explore opportunities to deliver habitats in advance of construction.

- Habitat selection and design: The Project aims to contribute to the restoration of a fenland landscape. This means a focus on wetland habitat creation where practicable.
- The provision of new or improved recreational areas, and access to nature, would bring the associated health and wellbeing benefits. Vegetation can also improve aesthetics, improve air quality and reduce noise effects.

5.6 Next steps

5.6.1 Iterative calculations: BNG is calculated at each design iteration. In between design iteration, BNG information is fed into construction and design information. Through this process, key decision making points prioritise opportunities for BNG within the Project, where practicable.

6 References

CIRIA (2019). Biodiversity Net Gain: Good Practice Principles.

Defra (2023a). Enabling a Natural Capital Approach (ENCA).

Defra (2023b). Local nature recovery strategies.

Defra (2025a). National Policy Statement for Water Resources Infrastructure.

Defra (2025b). Statutory Biodiversity Metric User Guide.

HM Government (2025). Biodiversity net gain for nationally significant infrastructure projects.

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Get in touch

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