Cambridge Waste Water Treatment Plant Relocation Project
Anglian Water Services Limited

Environmental Statement Chapter 13: Historic environment

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Summary

Introduction

This Environmental Statement (ES) Historic Environment chapter reports on the likely impact of the Proposed Development on the Historic Environment. This chapter considers built heritage, archaeological remains and historic landscape.

Summary relevant mitigation

Primary mitigation measures are those embedded into the design of the Proposed Development. Those relevant to the historic environment include; routing construction traffic to avoid Horningsea and Fen Ditton Conservation Areas, the landscaping and planting plan, the creation of an earthwork bank around the proposed CWWTPR and measures to prevent operational light spill. Secondary mitigation relevant to the historic environment include an Archaeological Investigation and Mitigation Strategy (AIMS) and relevant measures contained in the CoCP and LERMP.

Assessment approach

A historic landscape characterisation exercise has been undertaken for the area within 1km of the Scheme Order Limits. Designated assets within 1km of the Location and Scheme Order Limits and within the 10km Zone of Theoretical Visibility (ZTV) have been assessed. Non-designated assets within 500m of the Scheme Order Limits have been assessed. Assets have been assigned unique reference IDs (formatted as 'HE1234', etc.) for ease of cross-referencing. The assessment takes into account the results of surveys undertaken for the Proposed Development including; archaeological walkover surveys, asset setting assessments, geophysical survey and trial trenching. The significance of the effect for construction and for operation has been determined based on the sensitivity of receptors and magnitude of impact.

This chapter assesses the effect of the Proposed Development on the historic environment assuming the implementation of primary (design) and tertiary (best practice) mitigation measures. Secondary mitigation measures are proposed and residual effects remaining after the implementation of secondary mitigation is reported.

Summary construction effects

The following temporary significant effects are predicted on the Historic Environment during construction. These are reversible and would not result in residual effects:

- A temporary moderate adverse significant effect is predicted as a result of changes to the character of Baits Bite Lock Conservation Area (HE095).
- A temporary moderate adverse significant effect is predicted as a result of change to the character of Fen Ditton Conservation Area (HE097).
- A temporary moderate adverse significant effect is predicted on Biggin Abbey (HE011) and Poplar Hall (HE040). These effects would be a result of changes within their settings, which will alter how the assets are appreciated and temporarily reduce the contribution made to their heritage value by their settings.

The following permanent significant effects are predicted from the construction of the Proposed Development, including the permanent presence of structures:

- There will be a permanent moderate adverse significant effect as a result of impacts on the heritage value of Biggin Abbey (HE011). This would be a result of a permanent change within its setting from the presence of the proposed WWTP.

- Permanent moderate to large adverse significant effects are predicted as a result of the removal of archaeological remains during construction. This relates to four areas of prehistoric settlement activity (HE1307, HE1308, HE1328 and HE1329) within the land required for the proposed WWTP. Archaeological remains within the pipeline routes, including the Waterbeach pipeline, will also be removed. It is noted that the potential for the survival of archaeological remains north of the A14 has been severely impacted by post-medieval coprolite mining, which covered most of the agricultural areas of Horningsea and pockets of mining within Fen Ditton. The loss of archaeological remains through the construction of the Proposed Development will be mitigated through an Archaeological Investigation and Mitigation Strategy (AIMS) agreed with key stakeholders. There will be a residual effect due to the removal of archaeological remains.

Summary operation and decommissioning effects

No significant effects on the historic environment have been identified from the operation and maintenance of the proposed development, including the proposed WWTP, associated pipelines and Waterbeach pipeline. No residual effects on the historic environment have been identified in association with operation of the Proposed Development.

1 Introduction

1.1 Purpose of this chapter

1.1.1 This chapter of the Environmental Statement (ES) presents the findings of Environmental Impact Assessment (EIA) completed in relation to the potential impacts of the Proposed Development on historic environment.

1.1.2 The ES has been prepared as part of the application to the Planning Inspectorate (PINS) for development consent. This chapter considers the potential impacts to archaeological remains, built heritage and historic landscapes from the Proposed Development during its construction (including commissioning), operation and maintenance, and decommissioning phases.

1.1.3 This chapter (and its associated figures and appendices) is intended to be read as part of the wider ES, with particular reference to:

- Chapter 15: Landscape and Visual Amenity (Application Document Reference: 5.2.15);
- Chapter 17: Noise and Vibration (App Doc Ref: 5.2.17);
- Chapter 18: Odour (App Doc Ref: 5.2.18);
- Chapter 19: Traffic and Transport (App Doc Ref: 5.2.19); and
- Chapter 20: Water Resources (App Doc Ref 5.2.20).

1.1.4 This chapter summarises information from supporting studies, technical reports and publicly available data which are included within the following appendices:

- Historic Environment Baseline Report (Appendix 13.1, App Doc Ref: 5.4.13.1),
- Gazetteer of Assets – Historic Environment (Appendix 13.2, App Doc Ref: 5.4.13.2),
- Historic Landscape Characterisation (Appendix 13.3, App Doc Ref: 5.4.13.3),
- Historic Environment Impact Assessment Tables (Appendix 13.4, App Doc Ref: 5.4.13.4),
- Geophysical and trial trenching surveys (Appendix 13.5, App Doc Ref: 5.4.13.5)
- Historic Environment Approach document (Appendix 13.6, App Doc Ref: 5.4.13.6)

1.2 Competency statement

1.2.1 Summaries of the qualifications and experience of the Chapter authors are set out in Table 1-1.

Table 1-1: Competent experts

Author	Qualification/ Professional Membership	Years of experience	Project experience summary
[redacted]	Member of the Chartered Institute for Archaeologists MSc Archaeological Sciences BSc (Hons) Archaeology	20	Team leader for the Mott MacDonald heritage team. Specialisms in technical leadership for historic environment inputs into EIA/DCO inputs; archaeological fieldwork management and design for large infrastructure projects, including budget control and procurement and management of archaeological subcontractors; and historic environment stakeholder consultation. Projects include regional and national rail, water, highway, power and airport projects.
[redacted]	Member of the Chartered Institute for Archaeologists MA Practical Archaeology BA Ancient History and Archaeology	25	Technical lead and assurance for the historic environment on EIAs for nationally significant infrastructure projects including flood risk management, water utility, road, rail and energy.
[redacted]	Associate of the Chartered Institute for Archaeologists PhD Archaeology MA Archaeology BA Ancient History and Archaeology	11	Desk studies and technical reviews relating to the historic environment, including a wide variety of nationally significant infrastructure projects related to water, rail and transport; GIS mapping and data analysis; stakeholder consultation; design inputs; archaeological fieldwork management.
[redacted]	Associate of the Chartered Institute for Archaeologists MSc Biological Anthropology BSc (Hons) Archaeological, Anthropological and Forensic Science.	3	Numerous desk studies relating to the historic environment including for a wide variety of projects on nationally significant infrastructure; GIS mapping and data analysis; stakeholder consultation; design inputs; archaeological fieldwork management.
[redacted]	Supporter Member of the Institute of Historic Building MSc Architectural Conservation MA (Hons) Social and Architectural History	2	Desk studies and site surveys for numerous built heritage projects, including impact and setting assessments, and statements of significance; GIS mapping; and built heritage inputs for nationally significant infrastructure projects.

1.3 Planning policy context

1.3.1 Planning policy relating to the historic environment and pertinent to the Proposed Development comprises the following.

National Planning Statement (NPS) requirements

1.3.2 Planning policy on waste water Nationally Significant Infrastructure Projects (NSIPs), specifically in relation to historic environment, is contained in the National Policy Statement (NPS) for Waste Water (Department of Environment, Food and Rural Affairs, 2012).

1.3.3 Table 1-2 sets out how the scope proposed in this chapter complies with the NPS for Waste Water.

Table 1-2: Scope and NPS compliance

NPS requirement	Compliance of ES scope with NPS
Paragraph 4.10.7 – To describe the significance of heritage assets in a proportional way and including contribution by setting	A description of the heritage value (significance) of all assets within the relevant study areas is included in this ES in the Gazetteer of Assets – Historic Environment (Appendix 13.2, App Doc Ref: 5.4.13.2). Section 2.2 of this chapter discusses the use of heritage value versus significance within this assessment and a description of the methodology used to assess this. Assets with greater potential to be impacted have been described and assessed in greater detail. A setting assessment, to gauge its contribution to the heritage value of an asset, has also been undertaken for all relevant assets. This is also described in Section 2.2 of this chapter, below.
Paragraph 4.10.8 – To carry out desk-based research and field evaluation of archaeological assets	Desk-based research has been undertaken at previous stages and for the production of this ES and the technical appendix, Geophysical and trial trenching surveys (Appendix 13.5, App Doc Ref: 5.4.13.5). A programme of evaluation, initially including geophysical survey and trial trenching, was agreed with Cambridgeshire Historic Environment Team (CHET). Geophysical survey was undertaken in March 2021 and September 2021. Trial trenching was undertaken between November 2021 and February 2022.
Paragraph 4.10.9 – To ensure the extent of impact on the significance of heritage assets can be understood from documents	Gazetteer of Assets – Historic Environment (Appendix 13.2, App Doc Ref: 5.4.13.2) provides a clear assessment of heritage value (significance) in plain English for all heritage assets, as above described.
Paragraph 4.10.18 – To ensure the design avoids unnecessary damage to assets and any unavoidable losses are recorded	Inputs have been provided into the emerging design of the Proposed Development, so that where possible/practicable impacts to heritage assets can be avoided.
Paragraph 4.10.21 – To implement procedures for identification and treatment of as yet undiscovered	A programme of archaeological evaluation has been undertaken to establish the presence/absence of archaeological remains within the areas of ground disturbance. Where archaeological remains are anticipated,

NPS requirement	Compliance of ES scope with NPS
heritage assets with archaeological interest	their treatment will be managed through the Archaeological Investigation Mitigation Strategy (AIMS) agreed with CHET.

National planning policy

1.3.4 The National Planning Policy Framework (NPPF) (Ministry of Housing, Communites and Local Government, 2021) sets out the government's planning policies for England and how these are expected to be applied.

1.3.5 Chapter 16 of the NPPF pertains to the historic environment. Paragraphs 194, 199, 200 and 204-207 have informed the production of this chapter, the assessment undertaken and mitigation strategies.

Local planning policy

1.3.6 Local planning policy of relevance to historic environment and pertinent to the Proposed Development are listed below.

- The South Cambridgeshire District Council Local Plan (South Cambridgeshire District Council, 2018), Policy NH/18.
- Cambridge City Council Local Plan (Cambridge City Council, 2018) contains three items of relevance: Policy 61, Policy 62 and Appendix G.

1.4 Legislation

National Legislation

1.4.1 Legislation relating to the historic environment and pertinent to the Proposed Development comprises the following:

- The Planning (Listed Building and Conservation Areas) Act 1990.
- The Ancient Monuments and Archaeological Areas Act 1979.

1.5 Consultation

Scoping

1.5.1 Table 1-3 provides a summary of key points raised during scoping.

Table 1-3: Key points raised during scoping

ID	Consultee	Points raised	Response
3.8.1	PINS	The Applicant proposes to scope out consideration of effects on archaeological remains at the existing Cambridge WWTP and Waterbeach WRC. This is because the Applicant considers that any archaeological remains within the Scheme Order Limits would have been removed by previous development. The Inspectorate notes from Appendix A drawing numbers 0001- 100006-CAMEST-ZZZ-PLG-Z-8020 and 0001-100006-CAMEST-ZZZ-PLG-Z-8040, that excavation is proposed at the existing Cambridge WWTP and Waterbeach WRC through the relocation of existing sewers, tunnel shafts and construction compounds and that the extent of those works is still subject to optioneering studies. The Inspectorate also notes that while the existing works contain numerous built structures, the Scheme Order Limits also contain areas of apparent undeveloped land and as such, there could be potential for previously unknown archaeology to still be present. The Scoping Report lacks evidence that this potential has been explored, consequently the Inspectorate does not consider there is sufficient evidence to scope out archaeology at either existing Cambridge WWTP. This matter should be scoped into the assessment where significant effects are likely to occur.	Where significant effects are likely to occur, the effects on archaeology within the existing Cambridge WWTP are scoped in. Waterbeach Water Recycling Centre (WRC) is not within the Location and Scheme Order Limits. Please see Section 2.3 (Study area) which outlines the areas that are included, as well as Section 3.1 (Current baseline) which outlines the current baseline including archaeological potential. Chapter 2: Project Description and Works Plans (App Doc Ref: 5.2.2 & 4.3) set out the extent of proposed works within the Proposed Development.

ID	Consultee	Points raised	Response
3.8.2	PINS	The Applicant's Scoping Report considers that odour and noise will not have a significant effect on identified heritage assets but it is not clear how this conclusion has been reached. The Inspectorate considers that noise and odour can have an effect on the setting of heritage assets (individually and together) and thus can contribute to the overall significance of an asset. The Inspectorate considers that there is insufficient evidence provided in the Scoping Report to demonstrate that odour and noise effects will not have a significant effect on identified heritage assets and does not therefore agree that this matter can be scoped out of the assessment at this stage.	The potential for significant effects arising from noise and odour (both separately and together) within the setting of heritage assets has been considered during the assessment and is addressed in the operational assessment of effects (Section 4.3).
n/a	Greater Cambridge Shared Planning	We recommend that the impact of vehicular access to the Proposed Development is 'scoped in' in the EIA, including the impact of widening Low Fen Drove Way where it joins the access to Biggin Abbey in terms of setting of the heritage asset will need to be factored into the potential environment impacts and mitigation.	Proposed access arrangements for the proposed Cambridge WWTP have changed since the stage referred to in correspondence. Proposals do not include the widening of Low Fen Drove Way. However the impact of the new access, including potential change within the setting of Biggin Abbey, has been considered within this ES (see Section 4: Assessment of Effects).
n/a	Greater Cambridge Shared Planning	If driven piles be recommended, we will require further information on this to ensure that any nearby heritage assets will not be adversely affected.	Chapter 2: Project Description (App Doc Ref: 5.2.2) explains areas where driven piling could be used for construction. These elements of the design, which have the potential to physically impact heritage assets, have been appropriately assessed and incorporated into the primary mitigation. CoCP Part A and Part B (Appendix 2.1 & 2.2, App Doc Ref: 5.4.2.1 & 5.4.2.2) refers to secondary mitigation in relation to driven piling activities.
n/a	Cambridgeshire County Council	We recommend that the historic environment is included within this ES for the Proposed Development. This should include the results of an archaeological evaluation, which should identify the extent and character of archaeology likely to be impacted by the development. Prior to	The historic environment has been included within this ES. Archaeological evaluation has been undertaken and results are incorporated (see Section 3.1: Current baseline). This programme of evaluation

ID	Consultee	Points raised	Response
		evaluation, the significance of known and potential archaeological assets cannot be determined.	was agreed with CHET and the resultant reports have been signed off by CHET.
n/a	Cambridgeshire County Council	The evaluation, to include geophysical survey and field evaluation through trial trenching, will enable consideration of appropriate measures to mitigate the impact of the development. This may include archaeological excavations in advance of construction and make the results accessible through publication and archiving. Should archaeology of demonstrably equivalent status to Scheduled Monument, preservation in situ would be the appropriate response, in accordance with the NPPF Footnote 63. The intended mitigation measures should be included in the Environmental Statement.	Relevant secondary mitigation measures are included in the CoCP Part A and B (Appendix 2.1 & 2.2, App Doc Ref: 5.4.2.1 & 5.4.2.2). The Archaeological Investigation Mitigation Strategy (AIMS) will be produced by the project team, in consultation with the CHET. All mitigation for the Proposed Development follows the hierarchy of avoiding impacts where possible, including for high and very high heritage value remains (those of schedulable quality), minimising impacts where they cannot be avoided and appropriately recording as a last resort if mitigation through design is not possible.
n/a	Cambridgeshire County Council	We recommend that comments from colleagues in Historic Building Conservation and Historic England regarding direct and indirect impacts on designated assets are also taken into account in the Environmental Statement.	These comments have been considered and incorporated in this ES (see Section 4: Assessment of Effects).
n/a	Fen Ditton Parish Council	Clause 13.3 Study Area: The southern boundary of Anglesey Abbey, Registered Historic House & Gardens [Registered Park and Garden, with grade II* listed primary building and additional grade II listed structures] – lies on the 1km study area (Fig 13-1). However, it is stated as being 2.5km from the area l (13.6.7) and therefore captured as a Designated Historical Asset within a 10km ZTV. The sensitivity of this Historical Asset and extensive Permitted Footpaths and Public Rights of Way (ProW)s surrounding it including Quy Water are associated with the House and Gardens & SSSI (Quy Fen) and form part of its setting (Historical Landscapes). As such, Anglesey Abbey should be included as a designated Heritage receptor within the 1km zone along with the permitted rights of way and PRoWs that are identified as being within the 1km boundary to reflect the sensitivity of this historical asset and the relationship to the surrounding landscapes, ProWs, SSSI Proposed Development etc. to its	Anglesey Abbey house is located approximately 2.5km from the Scheme Order Limits, with the park and garden approximately 1.2km away. As such, it is appropriate to capture it with regard to the ZTV study area, however this does not mean it will be assessed with lesser scrutiny. Given the sensitivity of the group of assets, the potential for impact has been carefully considered and is specifically addressed in the Gazetteer of Assets – Historic Environment (Appendix 13.2, App Doc Ref: 5.4.13.2).. This ES chapter focuses on the historic, designated landscape rather than associated footpaths however, these are appropriately addressed in the relevant chapters of this ES (see Section 3.1: Current baseline

ID	Consultee	Points raised	Response
		setting and character. Note: Anglesey Abbey, Cambridgeshire (371,593 visits in 2017) ranked 9th most popular National Trust Property.	and Section 4: Assessment of Effects). Quy Park (HLCA62) has been assessed as it is also a heritage asset. Points pertinent to landscape and visual amenity are captured in Chapter 15: Landscape and visual amenity (App Doc Ref: 5.2.15).
n/a	Fen Ditton Parish Council	The relationship of the SSSI Quy Fen, Common Land to the three parishes of Fen Ditton, Horningsea and Stow Cum Quy is noted here. The Parish Boundaries have an unusual interlocking border established in 1412 culminating at Quy Fen with Lode Parish having boundaries nearby. The Common is managed today by Quy Fen Trust, the membership of which is of two representatives from each of the 3 Parishes. The open Fen Landscape forming extensive views from each of the Parishes towards Quy Fen, and extensive ProWs forming multiple access routes from each Parish are of significant cultural and landscape heritage for the 3 Medieval Villages. A map dating 1648 shows the potential origins of Low Fen Drove encircling a fen island 'Quir Hal' (Quy Hall today) again of significant historical heritage value. Historical information including personal accounts of travelling to the Fen from the 3 villages and the Fen's relationship to the 3 Parishes etc. can be obtained from Quy Fen Trust.	The information provided in correspondence and points made have been incorporated into the historic landscape assessment, including characterising the relevant part of the fenland landscape (see Section 3.1: Current baseline and Historic Environment Baseline Report, Appendix 13.1, App Doc Ref: 5.4.13.1). Open views in parts of the fens are acknowledged as important and have been considered when assessing impact. Information relating to Quy Hall Parkland (HLCA62) can be found in Appendix 13.1, App Doc Ref 5.4.13.1 Historic Environment Baseline Report. Information relating to Quy Hall can be found in the Gazetteer of Assets – Historic Environment (Appendix 13.2, App Doc Ref: 5.4.13.2) under HE016.
n/a	Fen Ditton Parish Council	Clause 13.6.15 should include the Conservation Area, and assets contained at Baits Bite Lock (within the EIA Scoping boundary) and Wildfowl Cottage Grade II specifically, alongside Biggin Abbey Grade II* which is listed already.	Each heritage asset referred to in the ES has been individually reviewed. Where an asset falls within the study area (i.e. has potential to experience an effect), it has been included in the assessment. The route of the transfer tunnels avoids all buildings, including those considered as designated and non-designated heritage assets.
n/a	Fen Ditton Parish Council	Clause 13.8.7 should include a reference to Wildfowl Cottage, a Grade II listed building.	Wildfowl Cottage is included in the assessment and is included in the Gazetteer of Assets – Historic Environment (Appendix 13.2, App Doc Ref: 5.4.13.2).

ID	Consultee	Points raised	Response
n/a	Fen Ditton Parish Council	Clause 13.8.9 should include the extensive views of the Proposed Development from within the Baits Bite Lock Conservation Area and associated PRoWs. The proposed project will have a permanent and significant impact on character and setting of landscape and setting of these historical [heritage] assets.	Views between the conservation area and the Proposed Development, and the effect this may have on its heritage value, are assessed as part of this ES chapter (Section 4: Assessment of Effects).
n/a	Fen Ditton Parish Council	The scope in Clause 13.8.14 and Table 13-3 should be changed as per. 13.8.5 above and the Table should include under 'Change to Character of Fen Ditton Conservation Area and setting of Associated assets' – 'Core Zone'.	This zoning is not part of the assessment approach applied. However, the potential to alter both the character and setting of the conservation area has been included in this ES chapter (see Section 4: Assessment of Effects).
n/a	Fen Ditton Parish Council	Clause 13.8.18 should include [Grade II listed] Wildfowl Cottage alongside [Grade II* listed] Biggin Abbey.	Wildfowl Cottage is included in this ES chapter as a heritage asset. It is listed in the Gazetteer provided in Gazetteer of Assets – Historic Environment (Appendix 13.2, App Doc Ref: 5.4.13.2)
n/a	Fen Ditton Parish Council	Clause 13.8.19 should not be relied on to scope out odour or noise impacts on Historic receptors. We note elsewhere that current Odour Models for the existing Cambridge WWTP are not accurate – Odour is not infrequently experienced more than 1km outside of current odour zones modelled in 2016/17 and so the modelled zones are not reliable. Further noise particularly from the alarms (reversing etc.) from HGV vehicles carries easily, particularly during night operations, leaving this open landscape vulnerable to noise pollution from construction and operations day and night. Traffic noise impacts will be dependent on the choice of permanent access and the duration of use of construction accesses.	The potential for significant effects arising from noise and odour (both separately and together) within the setting of heritage assets has been considered during the assessment and is addressed in the ES chapter (see Section 4: Assessment of Effects).
n/a	Fen Ditton Parish Council	Clause 13.8.21 and Table 13-4 should include Wildfowl Cottage Grade II, Baits Bite Lock [conservation area].	Both of these heritage assets are included in this ES chapter. They are listed in the Gazetteer provided in Gazetteer of Assets – Historic Environment (Appendix 13.2, App Doc Ref: 5.4.13.2)
n/a	Fen Ditton Parish Council	Clause 13.8.22 refers to Vehicle Movements/New Access routes Options 1a; 1b; and 2 will have significant permanent impacts on the character and setting of Conservation Areas and heritage assets which planting will not be able to mitigate.	The finalised access route 1b and proposed vehicle movements and their potential to impact all relevant heritage assets are assessed within this ES chapter (see Section 4: Assessment of Effects).

ID	Consultee	Points raised	Response
n/a	Fen Ditton Parish Council	Clause 13.11.8 should include Quy Fen and its relationship to 3 Parishes and significance of shared historical landscape (see 13.6.7 above).	Quy Fen is considered in the historic landscape assessment, see Historic Environment Baseline Report (Appendix 13.1, App Doc Ref: 5.4.13.1) and Section 4: Assessment of Effects.
n/a	Historic England	The assessment should consider: • the potential impact upon townscape; • direct impacts of historic archaeological fabric; • impacts on listed buildings, scheduled monuments, registered parks and gardens, conservation areas etc.; • potential for buried archaeological remains; • effects on landscape amenity; and • cumulative impacts.	All of these elements are considered within this ES chapter. The potential impact upon townscape and the effects on landscape amenity are also considered in Chapter 15: Landscape and visual amenity (App Doc Ref: 5.2.15).
n/a	Historic England	All heritage assets affected on the basis of an appropriate defined study area usually underpinned by a ZTV map. This should include heritage assets whose setting may be affected which may be at some distance from the Proposed Development. It is important that the assessment is designed to ensure that all impacts can be fully understood.	A 10km ZTV has been produced to support the assessment. Assets within this ZTV have been considered as part of the ES, in addition to the 1km study area for designated assets (see Section 2.2: Assessment methodology). The extent of this study area and inclusion of these assets in this ES chapter (Section 2.3) have been agreed through consultation with Historic England and CHET.
n/a	Historic England	The assessment should also consider the potential impact which associated activities (such as construction, servicing and maintenance, and associated traffic) might have upon perceptions, understanding and appreciation of the heritage assets in the area.	The effects of construction (temporary activities) and of operation (traffic, servicing and maintenance, etc.) of the Proposed Development on heritage assets are considered in this ES chapter in addition to permanent structures/changes.
n/a	Historic England	The assessment should consider the likelihood of alterations to drainage patterns that might lead to in situ decomposition or destruction of below ground archaeological remains and deposits, and can also lead to subsidence of buildings and monuments.	Cross-reference has been made to the appropriate water modelling within this ES to ensure these changes are understood and assessed (see Drainage Strategy, Appendix 20.12, App Doc Ref: 5.4.20.12).

ID	Consultee	Points raised	Response
n/a	Historic England	We would strongly recommend that Conservation Officers and the archaeological staff at the County Council and the relevant local planning authorities are involved in the development of this assessment.	CHET and the Greater Cambridge Conservation Officer have been consulted throughout the CWWTPR project, along with other local and district councils within the study area of the Proposed Development. This includes South Cambridgeshire District Council, Fen Ditton Parish Council and Horningsea Parish Council.

Technical Working Groups

1.5.2 Table 1-4 provides a summary of key points raised during engagement with Technical Working Groups.

Table 1-4: Key points raised during engagement with Technical Working Groups

Date	Consultee	Points raised	How and where addressed
19 April 2021	Cambridgeshire Historic Environment Team, Historic England, South Cambridgeshire District Council	Geographical survey area, initial design of the new proposed waste water treatment plant and other considerations, historic asset and assessment of impacts and mitigation.	A Historic Environment Approach document (Appendix 13.6, App Doc Ref: 5.4.13.6) was produced which detailed the process for developing a study area appropriate for the Proposed Development and the assessment methodology. Issued to the stakeholder 4 June 2021.
15 June 2021	Cambridgeshire Historic Environment Team, Historic England, South Cambridgeshire District Council	Pre-Scoping report review meeting and project update.	No key points to address.
7 December 2021	Cambridgeshire Historic Environment Team, Historic England, South Cambridgeshire District Council	Responses on viewpoints from CON 2 and comments on viewpoints from Scoping Report.	Review of viewpoints and methodology undertaken. Viewpoints and locations of photomontages were agreed with stakeholders.

Date	Consultee	Points raised	How and where addressed
1 February 20222	Cambridgeshire Historic Environment Team, South Cambridgeshire District Council	Update on the Preliminary Environmental Information Report (PEIR) approach. Update on landscape and heritage assessments, viewpoints and visual receptors, and archaeological surveys.	No key points to address.
22 April 2022	Cambridgeshire Historic Environment Team, South Cambridgeshire District Council	Review of Landscape and Historic Environment Assessment mitigation proposed and monitoring as proposed for Environmental Statement chapter Historic Environment.	No key points as raised in consultation response.

Statutory s42 consultation

1.5.3 Table 1-5 provides a summary of key points raised during statutory s42 consultation.

Table 1-5: Key points raised during statutory consultation

Date	Consultee	Points raised	How and where addressed
27 April 2022	Cambridgeshire County Council	A programme of archaeological evaluation has been commissioned, with the intention of determining the extent and significance of non-designated heritage assets of archaeological interest likely to be affected by the development. This will enable the scope of works required in mitigation of the development impact. Fieldwork has been completed, but as the report is yet to be completed, [CCC] cannot at present comment on the scope of mitigation likely to be required. Cambridgeshire County Council expect discussions regarding mitigation to resume with the Applicant when the evaluation results are available.	The results from the two geophysical surveys and two trial trenching surveys, as well as walkover and setting assessments, are reported in Geophysical and trial trenching surveys (Appendix 13.5, App Doc Ref: 5.4.13.5) and Historic Environment Impact Assessment Tables (Appendix 13.4, App Doc Ref: 5.4.13.4). The reports have been approved by CHET and the AIMS will be agreed in full with CHET.

Date	Consultee	Points raised	How and where addressed
22 April 2022	Historic England	The Historic Environment Report (HER) identifies three categories of heritage assets which will be affected. These are archaeology, built heritage and historic landscapes. The list includes local historic buildings such as Biggin Hall and conservation areas in Fen Ditton and Horningsea. To these Historic England recommends to add the Grade II* Quy parish church [Parish Church of St Mary, Quy]. As it is not only a building of historical importance but also a local landmark on which proximity to the Proposed Development will have an impact.	All assets within the relevant study areas (see Section 2.3) have been assessed for impacts within the Historic Environment Impact Assessment Tables (Appendix 13.4, App Doc Ref: 5.4.13.4). The study areas and approach have been agreed with Historic England. The Parish Church of St Mary, Quy (Grade II* listed) was reviewed in accordance with the ZTV study area methodology (see Section 2.3). The asset was not identified within the ZTV, however, a setting assessment was undertaken as a precaution. Through this, impact on the asset was scoped out. Please see asset HE012 in the Historic Environment Impact Assessment Tables (Appendix 13.4, App Doc Ref: 5.4.13.4).
22 April 2022	Historic England	Historic England are also pleased to note that other environmental factors that have the potential to affect heritage assets including noise vibration, light and odour are also to be assessed within the ES. Historic England understand that there are no designated archaeological heritage assets that would be directly impacted, but that there are undesignated remains that would be impacted due to the construction of the facility. They therefore defer to the local authority archaeological staff to comment and advise as appropriate. We also refer you to good practice advice notes produced by Historic England on behalf of the Historic Environment Forum in GPA2; Managing Significance in Decision-taking in the Historic Environment and GPA 3; The Setting of Heritage Assets. We recommend this guidance is both used and referenced in the full ES.	Production of this ES continued to consider the factors described. Refer to Section 4: Assessment of Effects, as well as through Impact Assessment Tables (Appendix 13.4, App Doc Ref: 5.4.13.4), which provides an impact assessment for every asset. The potential to impact non-designated archaeological remains has been assessed within this ES (see Section 4: Assessment of Effects), informed by the surveys described in Historic Environment Baseline Report (Appendix 13.1, App Doc Ref: 5.4.13.1). These surveys and the mitigation strategy have been developed in consultation with CHET. The appropriate guidance has been used to inform this assessment, including that referenced (see Section 2.1: Guidance).

Date	Consultee	Points raised	How and where addressed
22 April 2022	Historic England	Historic England note the reference to other environmental impacts of the Proposed Development such as levels of noise, light, traffic, and landscape assessments etc and that these have been addressed in their own right in relevant specialist chapters. We would ask that a non-technical summary of these impacts on the designated heritage assets is also provided in the cultural heritage [historic environment] chapter, with cross-referencing where there is a relevant overlap, in order to provide as full a basis for assessment as is possible. This should be aimed at helping us to interpret the technical data and assess the impact. We also recommend that all supporting technical heritage information is included as appendices.	Where impacts from other topics are pertinent to the historic environment, these are described in full within Section 4: Assessment of Effects, and Historic Environment Baseline Report (Appendix 13.1 App Doc Ref: 5.4.13.1). Cross-referencing to other chapters is used as a means of reducing repetition and providing additional information. However, a summary of relevant aspects relating to other disciplines is provided in the impact assessments for assets, so that changes may be properly understood. All supporting technical information relating to heritage is included in Appendix 13.1 – 13.6, App Doc Ref: 5.4.13.1 – 5.4.13.6.
27 April 2022	South Cambridge District Council	South Cambridge District Council would like to see: • More detail on the mitigation of construction impacts for heritage assets, including additional measures for mitigation of lighting. • A historic landscape characterisation exercise. • Details on why this site chosen above the other two, there needs to be a clearer analysis and explanation provided as to how the level of permanent harm to the setting of Biggin Abbey and Baits Bite Lock has been assessed as moderate in such circumstances. • The District Council considers further explanation as to the basis for the assessment of impact on Biggin Abbey and its conclusions is required. • There are a number of 'slight adverse non-significant adverse effects' identified in respect of the conservation areas. The District Council considers the basis for these conclusions should be explained further as it appears contradictory.	• Mitigation relating to lighting is detailed in the Lighting Design Strategy (Appendix 2.5, App Doc Ref: 5.4.2.5). • A historic landscape characterisation exercise has been undertaken for this ES. This is detailed in Historic Landscape Characterisation (Appendix 13.3, App Doc Ref: 5.4.13.3). • The site selection process is summarised in Chapter 3: Site Selection and Alternatives (App Doc Ref 5.2.3). The assessment of impact follows all relevant guidance and is detailed in Section 2.2: Assessment methodology, as well as in Historic Environment Baseline Report (Appendix 13.1, App Doc Ref: 5.4.13.1). • Individual assessments for Biggin Abbey and Baits Bite Lock can be viewed under asset numbers HE011 and HE095 in

Date	Consultee	Points raised	How and where addressed
		• It would be helpful if the terminology used to identify harm for all the assets was that used within the NPPF or in the Planning (Listed Buildings and Conservation Areas) Act 1990. • The District Council requires further details on the proposed ventilation shafts and the river outfall. Whilst harm has been identified it is difficult to assess the level without fuller details. It would also be beneficial to understand the rationale for the location of the shafts and outfall to understand whether alternative siting could reduce the likely impact on the identified heritage assets. • Further detail on the material detailing and colour of the proposed finishes to the structures of the development and the LVIA would aid in providing a more realistic representation of the potential impact of these finished structures on the landscape and built heritage assets.	Historic Environment Impact Assessment Tables (Appendix 13.4, App Doc Ref: 5.4.13.4). • In accordance with the relevant guidance, slight adverse effects are not considered to be significant effects. This is further explained in Section 2.2: Assessment methodology, as well as in Historic Environment Impact Assessment Tables (Appendix 13.4, App Doc Ref: 5.4.13.4). Individual assessment of the impact of the Proposed Development on conservation areas can also be viewed in Historic Environment Impact Assessment Tables (Appendix 13.4, App Doc Ref: 5.4.13.4). Of particular relevance are asset numbers HE095-HE099. • The terminology used within this ES is in accordance with EIA methodology and relevant guidance (as described in Section 2.2: Assessment methodology). The relationship between this and the language used in the NPPF is described in Section 2.2: Assessment methodology, an equation of significant effects to harm is provided in the conclusions in Section 5: Conclusions and summary. • A detailed description of the Proposed Development is provided in Chapter 2: Project Description (App Doc Ref 5.2.2). This has formed the basis of assessment within this ES chapter. The maximum design scenario (realistic worst case) assumptions made with regard to the

Date	Consultee	Points raised	How and where addressed
			historic environment are detailed in Table 2-6. • Points relevant to Landscape and Visual Amenity (such as the LVIA) are discussed in Chapter 15: Landscape and visual amenity (App Doc Ref 5.2.15). Where information on the finish of elements is not finalised or available, a reasonable worst case has been assumed. This prevents under-reporting of the effects on built heritage assets.
27 April 2022	Fen Ditton Parish Council	If potential archaeological remains are not already known in relation to 'Quy Hall' and the surrounding area, further research is undertaken to inform the potential of finding archaeological remains that may be of significance	This ES has been informed by the results of surveys (these are detailed in Section 2.5) and desk-based assessment, which are described in Section 2.5 and detailed within the Historic Environment Baseline Report (Appendix 13.1, App Doc Ref 5.4.13.1). An assessment of archaeological potential has also been undertaken. This is focussed on remains with the potential to be directly impacted, it is given in full in Section 8 of Historic Environment Baseline Report (Appendix 13.1, App Doc Ref: 5.4.13.1).
27 April 2022	Horningsea Parish Council	Within 500m of the site boundary are three Conservation Areas containing historic villages. The rural setting, scale, character and special identity of these 'necklace' villages are established as important characteristics and qualities of the Green Belt and these should be protected. Within 1km of the site boundary are many listed buildings of Grade I and II* (Horningsea alone has over 25 on the Historic England Register of the Most Important Historic Places in England). There is also a Registered Park and Gardens (National Trust); a range of valuable Strategic Green Infrastructure including the River Cam Corridor, several National Trails, an SSSI site, County Wildlife Sites and the National Trust's Wicken Fen Vision. Horningsea Parish Council requests that the impact on the setting and character of the Conservation Areas of	All conservation areas within the 1km study area and ZTV study area (see Section 2.3) have been assessed. This includes a proportionate assessment of heritage value, including character and the contribution made by setting. The assessment considers the potential for impact as a result of change within views and setting (as per the assessment methodology detailed in Section 2.2). The individual assessments are contained within the Historic Environment Impact Assessment Tables (Appendix 13.4, App Doc Ref: 5.4.13.4). Registered parks and gardens have been considered for the 1km study area, however, there are none

Date	Consultee	Points raised	How and where addressed
		Fen Ditton, Horningsea and Baits Bite Lock are included in the assessment of the impact of change in landscape and view. Approaches to the Villages via road and PRoW network should also be included in the assessment.	within this study area. They have also been considered for the ZTV study area (see Section 2.3: Study area). These are considered as historic landscape assets and are discussed in full in Section 7 of Historic Environment Baseline Report (Appendix 13.1, App Doc Ref 5.4.13.1). Parks and gardens are also subject to individual assessment in Historic Environment Impact Assessment Tables (Appendix 13.4, App Doc Ref: 5.4.13.4). The historic environment assessment which has been produced in relation to the Wicken Fen Vision Area is a key resource and has informed understanding of the historic environment baseline, as detailed within the Historic Environment Baseline Report (Appendix 13.1, App Doc Ref 5.4.13.1). Points relevant to Landscape and Visual Amenity are discussed in Chapter 15: Landscape and Visual Amenity (App Doc Ref 5.2.15), especially strategic green infrastructure, national trails, assessment of change in landscape and view. Points relevant to the community are discussed in Chapter 11: Community (App Doc Ref 5.2.11), especially SSSI and County Wildlife Sites (CWS). Points relevant to ecology are discussed in Chapter 8: Biodiversity (App Doc Ref 5.2.8).

Statutory s47 local community consultation

1.5.4 1.5.3 The Consultation Report (App Doc Ref: 6.1) describes the consultation process that CWWTPR has followed, and the Consultation Report Appendices (App Doc Ref 6.1) details the responses to all comments made during this consultation. Matters raised in relevance to biodiversity include:

- including the following assets in the assessment: Grade II* Quy parish church (legally referred to as Parish Church of St Mary, Quy), 'Quir Hal' (legally referred to as Quy Hall) and the surrounding area (includes the non-designated landscape and four Grade II listed assets) and Wildfowl Cottage (Grade II listed);
- mitigation recommendations, including single-line tree planting in various locations;
- reference to the recommendation to prevent construction traffic travelling through Horningsea Conservation Area, Fen Ditton Conservation Area and roads within it, including High Ditch Road and Ditton Lane; and
- potential combined impacts from the Proposed Development and a new high density urban multiple storey housing development within 500 metres of the Conservation Area boundaries to the west is considered in the assessment.

2 Assessment Approach

2.1 Guidance

2.1.1 The following relevant guidance has been referenced for this ES chapter:

- Chartered Institute for Archaeologists (CifA) for Historic Desk Based Assessment (Chartered Institute for Archaeologists, 2020);
- Conservation Principles, Policies and Guidance (English Heritage, 2008);
- Historic Environment Good Practice Advice in Planning Note 2: managing significance in decision making (Historic England, 2015);
- Historic Environment Good Practice Advice in Planning Note 3: the setting of heritage assets (Historic England, 2017);
- Statements of Heritage Significance: Analysing Significance in Heritage Assets (Historic England, 2019);
- Principles of Cultural Heritage Impact Assessment in the UK (IEMA, ClfA, & IHBC, 2022);
- Conservation Area Appraisal, Designation and Management, Historic England Advice Note 1 (Second Edition) (Historic England, 2019);
- DMRB: LA106 Cultural Heritage Assessment (Highways England, 2020a); and
- DMRB: LA104 Environmental assessment and monitoring (Highways England, 2020b).

2.2 Assessment methodology

2.2.1 The general approach to assessment is described in Chapter 5: EIA Methodology (App Doc Ref: 5.2.5).

2.2.2 Following the preliminary assessment of the likely significant effects of the Proposed Development, any further mitigation measures (secondary mitigation) are identified and described. These mitigation measures would further reduce an adverse effect or enhance a beneficial one. The assessment of likely significant effects is then carried out taking into account the identified secondary mitigation measures to identify the 'residual' environmental effects.

2.2.3 This Section provides specific details of the historic environment methodology applied to the assessment of the Proposed Development.

2.2.4 The full method of assessment for historic environment used for the Proposed Development is detailed in the Historic Environment Baseline Report (Appendix 13.1, App Doc Ref: 5.4.13.1).

Impact assessment criteria

2.2.5 The significance of an effect is determined based on the magnitude of an impact and the sensitivity of the receptor (heritage asset) affected by the impact of that magnitude. This Section describes the criteria applied in this chapter to determine the magnitude of potential impacts and sensitivity of receptors. The terms used to define magnitude and sensitivity are based on the above guidance, with particular relevance to Table 3.2N in DMRB LA104 Environmental assessment and monitoring (Highways England, 2020b). In accordance with national guidance, for historic environment the sensitivity of receptors is established in advance of the magnitude of impact.

Sensitivity of receptor

2.2.6 The heritage value of receptors (heritage assets) is based upon Table 2-1. The assessment of heritage value is based on a combination of designated status and professional judgement. The assessment considers the Secretary of State's non-statutory criteria for the scheduling of ancient monuments, assessment criteria adopted by Historic England as part of the Monument Protection Programme (MPP), and the Secretary of State's Principles of Selection Criteria for Listed Buildings.

Table 2-1: Receptor sensitivity criteria

Heritage value/ Sensitivity	Typical description	Typical criteria
Very High	Very high importance and rarity, international scale and very limited potential for substitution.	World Heritage Sites, assets of acknowledged international importance, assets that can contribute to acknowledged international research objectives.
High	High importance and rarity, national scale, and limited potential for substitution.	Scheduled monuments, Grade I, II* and II listed buildings, registered parks and gardens, registered battlefields, non-designated assets of schedulable quality, non-designated monuments, sites, or landscapes that can be shown to have specific nationally important qualities, and heritage assets that can contribute to national research objectives.
Medium	Medium importance and rarity, regional scale, limited potential for substitution.	Conservation areas, non-designated sites of medium importance identified through research or survey, monuments or sites that can be shown to have important qualities in their fabric or historical association.
Low	Low importance and rarity, local scale.	Non-designated assets – monuments or archaeological sites with a local importance for education or cultural appreciation, and which add to local archaeological and historical research. Very badly damaged heritage assets that are of such poor quality that they cannot be classed as high or medium, parks and gardens of local interest.

Heritage value/ Sensitivity	Typical description	Typical criteria
Negligible	Very low importance and rarity, local scale.	Heritage assets identified as being of little historic, evidential, aesthetic or communal interest; and resources whose importance is compromised by poor preservation or survival, or by contextual associations to justify inclusion into a higher grade.

Source: Mott MacDonald (2022) (based on Historic England guidance and DMRB, LA 104 Revision 1)

2.2.7 Typical criteria are based on professional judgement and the appropriate guidance, especially DMRB LA106 and Statements of Heritage Significance: Analysing Significance in Heritage Assets (Historic England, 2019). The assessment recognised that occasionally some heritage assets have a lower or higher than normal value/sensitivity within a local context. Additionally, this assessment process considers the component of the heritage asset that would be affected, and the ability of the heritage asset to absorb change without compromising the understanding or appreciation of the resource.

2.2.8 Within national planning policy and guidance, the heritage value attributed to a heritage asset is referred to as its 'significance'. To prevent confusion with EIA terminology regarding 'significance of effect', this ES uses the phrase 'heritage value' in place of 'significance' when referring to heritage assets. The definition attributed to ' heritage value' remains unchanged from that attributed to 'significance' in national planning policy and guidance.

2.2.9 A designated heritage asset is one that has been recognised to be of particular heritage value(s) by giving it formal status under law or policy intended to sustain those heritage values. These include World Heritage Sites, Scheduled Monuments, Listed Buildings, Protected Wreck Sites, Registered Parks and Gardens, Registered Battlefields or Conservation Areas designated under the relevant legislation, as defined in Annex 2 of the Glossary of the NPPF.

2.2.10 Non-designated heritage assets are sites, buildings, monuments, places, areas or landscapes identified as having a degree of significance meriting consideration in planning decisions because of their heritage interest but which do not meet the criteria for designated heritage assets.

2.2.11 Setting is the surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the heritage asset and its surroundings evolve. Elements of a setting may make a positive, negative or neutral contribution to the heritage value of an asset and may affect the ability to appreciate that heritage value or may be neutral.

Magnitude of impact

2.2.12 The criteria for defining magnitude for the assessment of impacts to historic environment are defined within in Table 2-2.

Table 2-2: Impact magnitude criteria

Magnitude of impacts	Criteria	Examples
Major	Adverse: Total loss or fundamental alteration to a heritage asset's significance and/or setting.	Total demolition of a building or complete removal of an archaeological features. Fundamental change to all key aspects of an asset's setting.
	Beneficial: Changes which entirely restore the setting of a heritage asset or substantially better reveal its heritage value	Total restoration of a heavily altered historic setting. Comprehensive and historically appropriate repair, restoration and/or re-use.
Moderate	Adverse: Partial loss or alteration a heritage asset's significance and/or setting.	Complete removal of a key aspect of a building's architecture or heavy alterations so it cannot be understood. Partial removal of an archaeological feature. Setting changes which substantially alter how an asset is understood, but do not change the entire historic setting.
	Beneficial: restoration of key parts of the setting of an asset or better reveal its heritage value	Restoration of key parts of a setting, changes to return key parts of a building to their historic layout or function, excellent and informed interpretation to allow better public appreciation.
Minor	Adverse: Minor loss of an element of a heritage asset and/or its setting.	Small changes in setting or small changes to the asset itself which make it harder to appreciate its heritage value.
	Beneficial: small changes to an asset or its setting which result in better revealing of its heritage value.	Small changes in setting or small changes to the asset itself which make it easier to appreciate its heritage value.
Negligible	Adverse: Very minor loss of elements of a heritage asset's setting.	Very small changes in setting or very small changes to the asset itself which make it harder to appreciate its heritage value.
	Beneficial: Very minor positive change within a heritage asset's setting.	Very small changes in setting or very small changes to the asset itself which make it easier to appreciate its heritage value.
No Change	No change to the heritage asset or its setting.	

The criteria and examples here given are based on an understanding of the DMRB in accordance with the other relevant guidance outlined in Section 2.1: Guidance.

Significance of effect

2.2.13 The significance of the effect upon identified Historic Environment receptors is determined by assigning an impact magnitude and sensitivity to the receptor. Table 2-3 sets out the significance matrix used to determine significant effects. Where a range of significance is presented, the final assessment for each effect is based upon expert judgement.

2.2.14 For the purpose of this assessment, any effects with a significance level of minor or less are not considered to be significant.

Table 2-3: Significance matrix

		Sensitivity/value of receptor				
Magnitude of impacts		**Negligible**	**Low**	**Medium**	**High**	**Very High**
	No Change	Neutral	Neutral	Neutral	Neutral	Neutral
	Negligible	Neutral or Slight	Neutral or Slight	Neutral or Slight	Slight	Slight
	Minor	Neutral or Slight	Neutral or Slight	Slight	Slight or **Moderate**	**Moderate** or **Large**
	Moderate	Slight	Slight	**Moderate**	**Moderate** or **Large**	**Large** or **Very Large**
	Major	Negligible	Slight or **Moderate**	**Moderate** or **Large**	**Large** or **Very Large**	**Very Large**

Source: DMRB ((Highways England, 2020a)

2.2.15 This ES identifies the anticipated 'impacts' of the Proposed Development on the historic environment and identifies the likely 'significant effects', in accordance with EIA methodology. This assessment is informed by an understanding of the NPPF, which refers to 'impacts' amounting to a degree of 'harm' to the 'significance' (value) of any heritage asset. This can be 'less than substantial harm' (predominantly associated with impacts to setting), 'substantial harm' (predominantly physical impacts to the asset) or 'total loss' (also classed as substantial harm). This ES, accordance with EIA methodology and relevant guidance, considers the 'value' of an asset as well as the magnitude (degree) of 'impact' to identify an 'effect' on the historic environment. As this methodology accounts for the heritage value of an asset, in addition to the impact to that asset, a 'significant effect' may not always equate to 'substantial harm', but rather 'less than substantial harm'.

2.3 Study area

2.3.1 The historic environment comprises all aspects of the environment resulting from the interaction between people and places through time. For the purposes of this ES, the historic environment has been divided into:

- archaeology;
- built heritage; and
- historic landscape.

2.3.2 Archaeology relates primarily to buried remains but may also encompass earthworks and other remains relating to past human activity. Built heritage comprises buildings and structures with heritage value. Historic landscape refers to the landscape, or elements of it, whose character is the result of the action and interaction of natural and/or human factors as perceived by people. Each of these includes designated and non-designated assets. Heritage assets, with the exception of buried remains, also have a setting.

2.3.3 The study areas applied in this ES are based on the maximum area of land required for the construction, operation, and maintenance of the Proposed Development and decommissioning of the existing WWTP, including land required for permanent and temporary purposes, within the Scheme Order Limits. The study areas used in this ES are:

- all designated and non-designated heritage assets within the Scheme Order Limits;
- designated heritage assets within 1km of the Scheme Order Limits and those identified within a 10km ZTV. This ZTV is further explained in Chapter 15: Landscape and Visual Amenity (App Doc Ref: 5.2.15);
- non-designated heritage assets within 500m of the Scheme Order Limits; and
- historic landscape character areas (HLCAs) within 1km of the Scheme Order Limits.

2.3.4 These study areas have been selected as a result of consultation with CHET and Historic England (as set out in Table 1-5) and as proportionate to identify the effects of the Proposed Development within the topographic and other conditions of the area. They are shown on Figure 13.1: Historic Environment Study Areas (see Book of Figures, Historic Environment, 13.1 to 13.15, App Doc Ref 5.3.13).

2.4 Temporal scope of assessment

2.4.1 For historic environment receptors, the magnitude of impact is assessed for the temporary impact of construction from factors such as the temporary presence of construction machinery and compounds. Impact is also assessed for the permanent impact of construction from factors such as excavation for the proposed scheme and the permanent presence of new structures and planting. Impact is also assessed for operation, which considers factors such as operational traffic, odour and lighting as well as maintenance and decommissioning.

Construction (temporary)

2.4.2 For the assessment, temporary construction effects are those for which the source begins and ends during the construction and commissioning stages prior to the proposed WWTP becoming fully operational as set out in Chapter 2 Project Description (App Doc Ref 5.2.2).

2.4.3 The assumed assessment years for construction are from 2024 until 2028.

Construction (permanent)

2.4.4 For the assessment, permanent construction effects are those that start once the proposed WWTP is fully constructed and includes the effects of the physical presence of the infrastructure, including the permanent change in land use.

2.4.5 The proposed WWTP is planned to be fully constructed in 2028, however the assessment assumes a level of maturity of the landscaping to 15 years after planting. Permanent changes are therefore assessed based on the year 2043.

Operation and maintenance

2.4.6 For the assessment, operation and maintenance effects are those that start once the proposed WWTP is commissioned and fully operational and includes the effects of its operation, use and maintenance. This includes the impact of operational traffic, lighting, noise and odour. It does not include the permanent presence of structures, which is captured above.

2.4.7 The assessment of operational effects will be the first full 12 months of operation (excluding any commissioning period for the proposed WWTP as this is part of the Construction Phase). The proposed WWTP is planned to become fully operational in Year 1 of operation, therefore the assessment year for the Operational Phase is 2028.

Duration of effects

2.4.8 Timescales associated with these effects, regardless of phase are as follows:

- Short-term – endures for up to 12 months after construction or decommissioning
- Medium-term – endures for 1-5 years
- Long-term – endures for 5-15 years
- Permanent effects – endures for more than 15 years and / or effects which cannot be reversed (e.g. where buried archaeology is permanently removed during construction).

2.5 Baseline study

Desktop data

2.5.1 Baseline information within the historic environment study area was collected through a detailed desktop review of existing studies and datasets. These are summarised in Table 2-4.

Table 2-4: Desktop information sources

Item or feature	Year	Source
The National Heritage List for England (NHLE) for information on nationally designated heritage assets	2022	Historic England
The Cambridgeshire Historic Environment Record (CHER)	2022	Cambridge Historic Environment Team (CHET), HER search enquiry number 4719

Item or feature	Year	Source
Conservation Area Appraisals and mapping	2022	South Cambridgeshire District Council, Cambridge City Council and Greater Cambridge Shared Planning
Historic Landscape Characterisation – National Historic Landscape Characterisation 250m Grid (England)	2020	Natural England
Archaeological reports, fieldwork reports and building surveys obtained from CHER	2022	Cambridgeshire Historic Environment Record (CHER), HER search enquiry number 4719
Archaeological Data Service (ADS) records	2022	Archaeological Data Service
Geological mapping and borehole information	2022	British Geological Survey
LiDAR	2022	Environment Agency
Aerial photographs and satellite images	Various dates	Historic England, local authorities

2.5.2 The information was reviewed and compiled into a technical assessment (Historic Environment Baseline Report, Appendix 13.1, App Doc Ref 5.4.13.1).

2.5.3 The assessment of impacts on the heritage value of assets through change to their settings has also drawn on the photomontages undertaken as part of Chapter 15: Landscape and visual amenity (App Doc Ref 5.2.15) to inform the wider settings analysis.

Surveys

2.5.4 In addition to existing information, non-intrusive and intrusive surveys were completed to gather site specific information on archaeological resource potential within the area of land required for the Proposed Development, the setting of heritage assets and nature of the historic landscape. Table 2-5 details the surveys completed in relation to the Proposed Development.

Table 2-5: Summary of surveys for historic environment

Survey	Coverage	Completed by	Date	Location
Geophysical survey for the Cambridge relocation project	Land required for the construction of the proposed WWTP, landscape masterplan, and final effluent pipeline and the outfall	Headland Archaeology	2021	Geophysical and trial trenching surveys (Appendix 13.5, App Doc Ref 5.4.13.5)
Transfer pipeline corridor from a pumping station off Bannold Drove, Waterbeach (hereafter the Waterbeach pipeline) geophysical survey	Section between Low Fen Drove Way and northern extent close to existing Waterbeach WRC	Headland Archaeology	2021	Geophysical and trial trenching surveys (Appendix 13.5, App Doc Ref: 5.4.13.5)

Survey	Coverage	Completed by	Date	Location
Archaeological walkover survey	Land required for the construction of the proposed WWTP, landscape masterplan, and final effluent pipeline and the outfall	Mott MacDonald	2021	Historic Environment Baseline Report (Appendix 13.1, App Doc Ref 5.4.13.1)
Setting assessments	All accessible assets within the 500m and 1km study area, additional assets in the ZTV study area	Mott MacDonald	2021 and 2022	Historic Environment Baseline Report (Appendix 13.1, App Doc Ref 5.4.13.1)
Trial trenching survey Cambridge relocation project	Land required for the construction of the proposed WWTP, landscape masterplan, and final effluent pipeline and the outfall	Network Archaeology	November 2021 to January 2022	Geophysical and trial trenching surveys (Appendix 13.5, App Doc Ref 5.4.13.5)
Trial trenching survey Waterbeach pipeline	Section between Low Fen Drove Way and northern extent close to existing Waterbeach WRC	Cotswold Archaeology	2022	Geophysical and trial trenching surveys (Appendix 13.5, App Doc Ref 5.4.13.5)

2.6 Assumptions and limitations

2.6.1 Data sources on the historic environment can be limited by the dependence on opportunities for historical and archaeological research, fieldwork, and discovery. Where nothing of archaeological or historical interest is recorded in a particular area, this can be down to a lack of research or investigation, rather than no heritage assets being present. The following sources have known limitations:

- Information provided by the CHER can be limited as it is reliant on previous archaeological and historical research.
- Documentary sources are rare before the medieval period, and many historical documents are inherently biased. Older primary sources often fail to accurately locate sites and interpretation can be subjective.
- Historic maps provide a glimpse of land-use at a specific moment. It is therefore possible that short-term structures or areas of land-use are not shown and therefore not available for assessment.

2.6.2 The Cambridge University Collection of Aerial Photographs (CUCAP), which holds the largest collection of aerial photographs of the Cambridge area, includes photographs of known heritage assets. It cannot be viewed as it does not currently allow visitors and therefore these sources have only been incorporated where available from secondary sources.

2.6.3 The study area has not been subject to the National Mapping Programme by Historic England.

2.6.4 An historic landscape character assessment has not been published for Cambridgeshire. Assessment of the historic landscape is reliant on the existing national designations (conservation areas, registered parks and gardens and registered battlefields), national historic landscape assessment, baseline research and professional judgement.

2.6.5 Impacts on the historic environment include changes in the settings of heritage assets relating to proposed landscaping. The implementation of the landscape masterplan is considered primary mitigation, however the management of this landscaping (as described in the LERMP) is considered secondary mitigation. The findings of the assessment of permanent construction effects on the historic environment, taking into account primary and tertiary mitigation measures only, assume implemented landscaping would survive to maturity. This is because without the secondary mitigation measures, including monitoring and maintenance of new planting and replacement of failed planting as set out in the LERMP (Appendix 8.14, App Doc Ref: 5.4.8.14), it is not possible to predict how the planting will grow, how much failed planting would be replaced or how much of a screening effect the planting would have by year 15.

2.7 Maximum design envelope (Rochdale) parameters for assessment

2.7.1 The design parameters and assumptions presented are in line with the 'maximum design envelope' approach (base scheme design). For each element of this chapter, the maximum design envelope parameters detailed within Table 2-6 have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group.

2.7.2 The assessment parameters are based on the design of the proposed WWTP and access, transfer tunnel route and outfall location, Waterbeach pipeline route and connections between the existing Cambridge WWTP, as described in Chapter 2: Project Description (App Doc Ref: 5.2.15). The assessment considers a realistic maximum design envelope based on the maximum scale of the elements and as a result, no effects of greater significance than those assessed are likely.

Table 2-6: Maximum design envelope (Rochdale) parameters for historic environment assessment

Potential impact	Maximum design scenario	Justification
Construction (temporary)		
Temporary (short to medium term) change within the settings of heritage assets, character of conservation areas and the character of the historic landscape.	Land required for the construction of the waste water transfer tunnel including Shaft 4 and Shaft 5 will be required for up to 24 months. Construction compounds, machinery, cranes, and hoarding at Shaft 4 for up to 24 months (activity during 3 months during shaft construction and then the site would only be used for removal of equipment over the course of 4-5 days). The site will remain fenced, secure and unlit when not in use. Shaft 4 will be reinstated (backfilled) and the surface reinstated for agricultural use. Backfilling and reinstatement will take up to 1 month(s).	Represents the greatest potential change to the setting of heritage assets and character for the historic landscape from the waste water transfer tunnel, including the shaft 4 site.
	Machinery, fencing, hoardings, hard surfacing, materials stockpiles, cranes and earthworks will be present within the land required for the construction of the Waterbeach pipelines for up to 12 months.	Represents the greatest potential change to the setting of heritage assets and character for the historic landscape from the Waterbeach pipeline.
	The construction of the treated effluent pipeline will take up to 12 months.	Represents the greatest potential change to the setting of heritage assets and character for the historic landscape from the treated effluent pipeline.
	There will be a temporary set of site offices, stacked up to approximately 12m high and welfare units will be established alongside the new site entrance. From this compound, the enabling works will be managed until the permanent site compound is established. These will be in place for up to 4 months. The main construction compound will be un use for up to 39 months.	Represents the greatest temporary visual change in the proposed WWTP site and therefore within the setting of heritage assets.
	Lighting will be required on construction compounds and task lighting will be required along the pipeline routes and at the treated effluent discharge outfall for: of up to 300 lux. • up to 12 months at the construction compound near the outfall; • up to 12 months at the construction compound for Waterbeach; • intermittently at Shaft 4 with; up to three months during shaft construction, then up to five days for each event to recover the tunnelling equipment;	Represents the greatest potential temporary change to the setting of heritage assets from the presence of lighting during construction.

Potential impact	Maximum design scenario	Justification
	• up to 39 months at the land required for the construction of the proposed WWTP and completion of the landscaping proposals; and • Navigational warning lights will be within the river for up to 4 months for the construction of the outfall.	
Temporary changes within the character of conservation areas	The outfall arrangement during construction will require a temporary working area of up to 70m x 20m at the River Cam for up to 4 months. A temporary compound will be located close to works to construct the outfall, final and storm pipeline and will be in use for up to 12 months. The compound will be enclosed by solid hoarding.	Represents the most visually intrusive change in the conservation area during construction.
Construction (Permanent)		
Permanent removal or truncation of archaeological remains.	Construction of structures within land required for the proposed WWTP sub surface structures to maximum depth of 40m below ground level for the TPS. Other structures have a maximum depth of 8m below ground level although this does not include piled foundations which have a depth of up to 25m below ground level. Excavation of the entire area within the land required for the proposed WWTP to the depth of the archaeological horizon will be required.	Represents the greatest potential to impact archaeological remains from the proposed WWTP.
	The worst case for final effluent pipeline is a maximum depth of trench 5m below ground level . The width of the corridor for the treated effluent pipeline construction will be up to 50m. Prior to laying the pipes, a working easement will be established, up to 40m wide and fenced on both sides.	Represents the greatest potential to impact archaeological remains from the treated effluent pipeline
	The area of land and extent of river temporarily required for the construction of the treated effluent discharge outfall to the River Cam up to 20ha. The outfall structure will be constructed on the eastern bank of the River Cam and will be approximately 12m long x 7m wide x 4m deep. Removal of 150m^2 of riverbed for the placement of erosion protection.	Represents the greatest potential to impact archaeological remains from the construction of the outfall structure.

Potential impact	Maximum design scenario	Justification
	The easement required to construct the Waterbeach pipeline will result in a 30m wide corridor for construction. Entire length of Waterbeach pipeline excluding drilled crossings under the A14, railway and River Cam will be open cut. The average depth of the Waterbeach pipeline would be 2-5m with deeper Sections of up to 20m below ground level (bgl) for crossings by trenchless construction techniques, such as to cross the River Cam, railway, A14 and Horningsea Road. A number of laydown areas will be required along the route of the new rising main. These will be located approximately every 1km and will be used to store Sections of the pipeline whilst the construction takes place. Each laydown area is expected to be a maximum of 20m x 80m. It has been assumed that each will require the topsoil to be stripped, a barrier laid (i.e. terram geotextile) and the area covered with hardstanding. The hardstanding will be removed, and the topsoil reinstated when the use of the laydown area ceases. These will be in use for up to 12 months.	Represents the greatest potential to impact archaeological remains from the Waterbeach pipeline.
	Tunnel maximum depth is 24m below ground level (cover depth to the top of tunnel). Tunnel average depth between 10-20m below ground level . The tunnel will have an approximate length of 2.4km, an internal diameter of 2.4m (with a nominal external diameter of 2.7m).	Represents the greatest potential to impact archaeological remains from the waste water transfer tunnel.
	Within the footprint of temporary construction compounds and lay-down areas topsoil will be stripped to a depth at which archaeological remains may be present.	Represents the greatest potential to impact archaeological remains.
Permanent change within the setting of heritage assets, character of conservation areas and the character of the historic landscape.	Tall structures in the proposed WWTP include: • odour control unit exhaust stack (16m above finished ground level (FGL); • final settlement tanks (5m below FGL); • sludge storage tanks (8.5m above FGL); • thickening building (10m above FGL); • odour control unit vent stacks (16m above FGL); • digesters (21.5m above FGL); • heating pasteurisation and hydrolysis HpH tanks (15m above FGL); • cake storage barn (9m above FGL); • liquor treatment plant (9m above FGL);	Represents the most visible elements of the proposed WWTP over distance, and therefore greatest change in the setting of heritage assets.

Potential impact	Maximum design scenario	Justification
	• gas holder (16m above FGL); • boiler building (8.5m above FGL); • boiler stack (2m in diameter and 24m above FGL high); • gateway building (9m above FGL, with piling 25m below FGL); and • workshop (10m above FGL). The minimum height of the stack would be 19m above finished ground level and the maximum height would be 24m above finished ground level.	
	The earth bank will be up to 5m high constructed from site won material. Landscaping will be implemented as described in the landscape masterplan.	Represents the greatest reasonable screening of the Proposed Development within the setting of heritage assets.
	The concrete outfall arrangement will occupy a up to 12m length of the riverbank, with river bank protection either side so that the total area affected is up to 35m. Sheet piling will be installed along the eastern riverbank, south of the outfall to meet existing sheet piling at the A14 bridge and around 20m north of the outfall. The outfall will be made of a pre cast concrete structure The design of the outfall is in alignment with existing ground levels and will integrate into the existing path. The roof of the outfall chamber will be at approximately existing ground levels and will be covered in soil and seeded with grass seed. The outfall will be accessed via an existing 4m wide track from Biggin Lane.	Represents the greatest reasonable change within Baits Bite Lock Conservation Area from the presence of the proposed outfall structure.
Operation		
Permanent change in the setting of heritage assets due to the presence of lighting.	Street lighting is confined to the area in the immediate vicinity of the existing signalised junctions. As part of the Proposed Development, it is considered that as a worst case, lighting on Horningsea Road is required from Low Fen Drove Way to approximately 100m south of the southern A14 on-slip signalised junction. The visitor car park (outside the earthwork bank) will be lit during office hours only with light columns up to 5m high. It is assumed that lighting columns on the proposed WWTP within the earthwork bank will also be up to 5m high. While some lights will be activated by motion sensors, others will be continuously on in locations such as building entry points. In addition, task lighting on the proposed	Represents the maximum change in light levels within the setting of assets.

Potential impact	Maximum design scenario	Justification
	WWTP (including on tops of structures) will be used when required. It is assumed that the brightness of the lighting in the gateway building will be reduced by the installation of blinds/screens over the windows.	
Permanent change in the setting of heritage assets due to odour.	Inlet works will be a covered structure. Odour control units will be installed at the sludge treatment centre. Low turbulence process technology will be used within the proposed WWTP. Processed sludge cake will be 'dewatered' and digested using biological treatment. Use of covered reception areas at the terminal pumping station (TPS), inlet works and at the sludge tanks. Air from these areas will be vented through the odour control plant.	Represents the greatest reasonable presence of odour within the setting of heritage assets.

2.8 Impacts scoped out of the assessment

2.8.1 The following potential impacts were scoped out of this assessment.

Table 2-7: Impacts scoped out of the historic environment assessment

Potential impact	Justification
Impact to archaeological remains from operation	Impact to archaeological remains would be experienced during construction of the Proposed Development, therefore there would be no impact during operation (see also Section 1.5: Consultation).

2.9 Mitigation measures adopted as part of the Proposed Development

2.9.1 This Section refers to the mitigation types, as defined in Section 1.5 of Chapter 5: EIA Methodology (App Doc Ref: 5.2.5) and how they apply to the assessment of historic environment.

2.9.2 Through an iterative process, including consultation and engagement with consultees, and through the EIA, the Applicant has sought to identify and incorporate suitable measures and mitigation for potentially significant adverse effects, as well as maximising beneficial effects where possible.

2.9.3 Some measures are 'embedded' in the design of the Proposed Development for which consent is sought by virtue of the scope of the authorised development, as set out in Schedule 1 to the DCO and the accompanying Works Plans. These are considered primary mitigation. For example, adjustment of Order Limits to avoid sensitive features, amending the sizing and location of temporary access routes and compounds.

2.9.4 Secondary measures may be detailed activities for example the preparation of detailed AIMS in accordance with the CoCP, the preparation and delivery of a monitoring plan for specific matters (air quality, water quality) or the preparation and delivery of specific environmental management plans (for example air, noise, water), and the preparation and implementation is secured through the CoCP. These secondary measures are differentiated from the good practice measures

2.9.5 Tertiary measures comprise good practice measures (such as measures within Considerate Contractors Scheme) and measures integrated into legal requirements secured through environmental permits and consents (least flexible as either the legislation exists to create the mitigation or does not (i.e. Protected Species Licensing).

2.9.6 Section 5.3 of Chapter 5: EIA Methodology (App Doc Ref: 5.2.5) sets out the required permits and consents related to the Proposed Development.

2.9.7 Where beneficial effects are voluntarily introduced without the requirement to mitigate an effect, these are termed 'enhancement measures'.

2.9.8 The remainder of this Section sets out the embedded measures (primary) and tertiary, and additional measures (secondary) relevant to the assessment of historic environment.

Primary (embedded) and tertiary measures

2.9.9 Table 2-8 sets out the embedded mitigation measures relevant to historic environment that will be adopted during the construction, operation and decommissioning of the Proposed Development.

Table 2-8: Primary and tertiary mitigation measures relating to historic environment, adopted as part of the Proposed Development

Mitigation measures		Type	Applied to	Justification
Construction (Temporary)				
Avoiding conservation area	Construction traffic will be routed around, rather than through, Horningsea Conservation Area.	Primary	Construction traffic and secured in the traffic management plan.	To reduce temporary change in the character of the conservation area during construction.
Construction (Permanent)				
Landscape Masterplan	Implementation of the Landscape, Ecological and recreational Management Plan (Appendix 8.14, App Doc Ref: 5.4.8.14) setting out the approach to the landscape design for the proposed WWTP site. The masterplan comprises a circular earth bank up to 5m high, woodland, trees, hedgerows, grassland and sustainable drainage swales.	Primary	Proposed WWTP and extent of land required for the landscape masterplan.	To reduce potential change within the settings of Biggin Abbey, Poplar Hall and Horningsea, Fen Ditton and Bites Lock Conservation Areas.
Incorporation of landscape earthworks as part of the design	The development of the landscape masterplan to include screening earth bank and planting	Primary	Proposed WWTP	To provide screening of the proposed WWTP
Operation				
Screens to prevent light spill	Provision of screening mechanism in office / operational buildings to prevent spill of light	Primary	Gateway building	To prevent lightspill from the Gateway building
Low level lighting in car park	Use of low level lighting within the car parking area to the front of the Gateway building	Primary	Gateway building car park	To minimise lightspill into the surroundings of the Proposed WWTP.

Secondary measures

Construction (temporary and permanent)

2.9.10 During the construction phase, the CoCP and associated management plans specify the range of measures to avoid and minimise impacts that may occur in construction (CoCP Part A (Appendix 2.1, App Doc Ref 5.4.2.1)). Post grant of the DCO and prior to commencement of construction of specific construction activities the contractor will prepare the CEMP and associated sub-plans as specified in the COCP Part A. These detailed plans will be approved by the Employer. The CEMP and associated management plans will remain 'live' documents and periodically modified throughout the duration of construction.

2.9.11 The following Sections of the CoCP Part A (Appendix 2.1, App Doc Ref: 5.4.2.1) contain measures relevant to historic environment:

- Section 3.4 of the COCP Part A requires that the Principal Contractor(s) prepare a Noise and Vibration Management Plan (NVMP) before development commences. The Applicant will require the Principal Contractor(s) to undertake and report monitoring as is necessary to assure and demonstrate compliance with all noise and vibration commitments. This continual monitoring will allow for reactive mitigation to reduce temporary change in the setting of heritage assets;

- Section 4.10 (Working Hours) Table 4-1 sets out the working hour restrictions applied to the Proposed Development. This Section also reinforces the commitment for ongoing communication in relation to works activities and timing;

- Section 5.3 (Site compound set-up) includes measures relating to fencing and boundary protection of compounds, including requirements for temporary fencing or other boundary treatments to be maintained in a tidy condition and be fit for purpose for the duration of construction;

- Section 5.9 (Site Lighting) includes measures in relation to temporary lighting in construction, a requirement to comply with The Institution of Lighting Professionals: Guidance Note 1 for the reduction of obtrusive light 2021 and implementation of a lighting strategy during the construction period;

- Section 5.14 (River Work) covers work to the River Cam which are located within the Baits Bite Lock Conservation Area; and

- Section 5.14 (Other Watercourse/Drainage Channels) covers work to other watercourses and drains and includes measures related to reinstatement.

2.9.12 A requirement for the production of a detailed Archaeological Investigation Mitigation Strategy (AIMS) in consultation with CHET is included in Section 7.1 of the CoCP. It requires that an Archaeological Contractor is appointed who will be

responsible for undertaking of the works described in the AIMS. The AIMS will set out:

- A programme for the AIMS for the Proposed Development will be agreed with CHET to record remains identified through survey.
- Recording details of archaeological remains where an adverse impact is unavoidable; The records will be completed in a manner proportionate to the heritage value of the remains. This evidence (and any archive materials generated) will be made publicly accessible.
- A programme of archaeological recording, publication and archiving to offset the loss of knowledge (although archaeological investigation cannot mitigate the loss of archaeological remains).

2.9.13 Section 7.7 of the CoCP (Noise and vibration) includes measures to reduce/control noise and vibration at the source:

- Switching off equipment between use and the use of engine covers on plant. This will reduce adverse noise impacts and the potential impact additional noise will have on the setting of Biggin Abbey, Poplar Hall, Red House Close, Fen Ditton Conservation Area, Horningsea Conservation Area and Waterbeach Conservation Area.
- There is a requirement for the production of CEMP which will include the requirement for the contractor to undertake pre- and post- construction condition surveys of the three buildings in order to understand the potential impact caused by vibration. If damage occurs, this will be repaired by the contractor.
- The CEMP will include the requirement for the contractor to undertake pre- and post- construction condition surveys of the three buildings in order to understand the potential impact caused by vibration. If damage occurs, this will be repaired by the contractor.

Operation

2.9.14 The LERMP is included within the Application (Appendix 8.14, App Doc Ref 5.4.8.14). The purpose of the LERMP is to set out how landscape, recreational features and ecological habitat and enhancements (vegetation and habitats) would be protected and managed following construction for a period of 30 years. Post grant of the DCO and prior to commencement of landscaping works an updated plan will be prepared and agreed with the local authority. The LERMP will ensure the success of landscape planting and therefore minimize change in the settings of heritage assets.

Decommissioning

2.9.15 Decommissioning of the existing Cambridge WWTP would be subject to a Decommissioning Management Plan which is to be agreed with the Environment

Agency. An outline Decommissioning Management Plan (Appendix 2.3, App Doc Ref: 5.4.2.3) describes measure applied to this activity. Post grant of the DCO and prior to commencement of decommissioning, a detailed plan will be prepared and agreed with the Local Planning Authority and the Environment Agency. However, as no impacts are anticipated from the decommissioning activities on the historic environment, this secondary mitigation measure is not of relevance to this ES chapter.

3 Baseline Environment

3.1 Current baseline

3.1.1 This Section provides an overview of the historic environment baseline. Further detail regarding the baseline as relevant to the historic environment is provided in Gazetteer of Assets – Historic Environment (Appendix 13.2, App Doc Ref 5.4.13.2). Assets have been assigned an alphanumeric reference formatted HE1234 which are used consistently across historic environment reporting for ease of cross-referencing. A full gazetteer of assets and these reference numbers is available in Gazetteer of Assets – Historic Environment (Appendix 13.2, App Doc Ref: 5.4.13.2).

Archaeological and historical development overview

3.1.2 There is evidence of prehistoric activity within the study area, including within the Scheme Order Limits. Four areas of prehistoric activity were identified during trial trenching of the land required for the construction of the proposed WWTP and associated landscaping (HE1307, HE1308, HE1328 and HE1329). The earliest activity identified relates to one pit containing in-situ deposits from the late Mesolithic or early Neolithic period (HE1308). Worked flints were also recovered elsewhere in the Scheme Order Limits, but these were not in situ. A single hand axe was also recovered from a palaeochannel (HE1305) within the waste water transfer tunnel construction corridor. During the Mesolithic and early Neolithic periods, the chalk lowlands on the fen edge would have provided suitable sites for temporary camps, allowing the resources of the fens to be exploited. The remains recovered within the Scheme Order Limits may be indicative of nomadic hunter-gatherer groups utilising areas within the Scheme Order Limits.

3.1.3 More substantial evidence of late Bronze Age to early Iron Age activity was identified during trial trenching. Four areas of probable settlement activity were identified within the land required for the construction of the proposed WWTP and associated landscaping (HE1307, HE1308, HE1328 and HE1329). One of these (HE1308) also showed the Mesolithic or Neolithic activity above described. In addition, two cremations (HE1309 and HE1310) were found associated with two of the areas. Therefore, the Scheme Order Limits may contain a late Bronze Age or early Iron Age settlement (or settlements) which has not previously been identified.

3.1.4 A Roman site (HE1006), with possible late Iron Age origins, was formerly located within the Scheme Order Limits. However, the surveys undertaken for the Proposed Development have identified that these remains were removed during the construction of the A14. The only associated surviving evidence within the Scheme Order Limits is a trackway (HE1304) identified south of the A14, which likely connects to this former settlement. The River Cam is known to have been navigated since at least Roman times, thereby encouraging development and commercial activity. There are extensive remains of Roman pottery kilns at Horningsea, for example. A Section of Car Dyke (HE003), an 85-mile (137km) long artificial water channel, connects to the River Cam just to the south of Waterbeach, opposite

Mulberry House Farm. This activity demonstrates the exploitation of the fens for water-based transport in the Roman period. Numerous Roman findspots have been identified throughout the area within the Scheme Order Limits.

3.1.5 Fleam Dyke (HE1016), which runs along the northern side of High Ditch Road (within the study area), dates to the Early Medieval period. Other Sections of the monument (outside of the study area), where the bank and ditch are more pronounced, are scheduled.

3.1.6 The settlements of Fen Ditton, Horningsea, Stow-cum-Quy and Waterbeach all emerged in the early medieval to medieval periods. These settlements have all remained as rural agricultural communities, developing gradually through the medieval and post-medieval periods. The oldest surviving built heritage assets within the study area date to the medieval period. During that time, the study area was sparsely populated and occupied by hamlets and small villages surrounded by farmland associated with the local estate or manor. These estates were owned by lords, the clergy or monastic houses. For example, Biggin Abbey (HE011) was the residential manor house of the Bishops of Ely, despite being known as an Abbey. It was subsequently converted into a farmhouse and is presently subdivided into cottages.

3.1.7 The rest of the study area has largely remained as agricultural land. This mostly comprises the formerly waterlogged fenland, drained through an extensive programme of reclamation in the Post-Medieval period. The agricultural history of the study area is evidenced by the presence of ridge and furrow throughout the medieval, post-medieval and modern periods. This agricultural land would have served the nearby settlements and grand houses. For example, agricultural land required for the construction of the proposed WWTP, most likely served Biggin Abbey (HE011).

3.1.8 The built environment within the study area is predominantly post-medieval in date and character. Agriculture remained dominant in the surrounding landscape. Farmhouses, such as Poplar Hall (Grade II listed), were constructed during this period. In the historic cores of the fen-edge settlements in the study areas, such as at Horningsea, Fen Ditton and Waterbeach, Post-Medieval cottages, houses and street furniture also survives.

3.1.9 Much of the agricultural landscape survives and is utilised into the Modern period, but this landscape has been slowly eroded by the expansion of settlements and modern infrastructure. Cambridge gradually grew before expanding more rapidly in the modern period with a number of large residential estates built on former agricultural land north of the city.

3.1.10 Post-Medieval and Modern transport infrastructure has also influenced the development of the area, including railways and the A14. Some of this infrastructure was built to serve the major industry emerging in the study area in the 19th century, i.e., coprolite mining. The study area was widely mined for coprolites, especially east and south of Horningsea and throughout the north of the study area and Scheme Order Limits. Trial trenching undertaken for the project has identified extensive

evidence of this and allowed for the mapping of its indicative extent (HE1303). In these areas, the mining has removed earlier archaeological remains.

Archaeological baseline and potential

3.1.11 There are no scheduled monuments within the Scheme Order Limits. There are four scheduled monuments within the 1km study area, as follows:

- Multi-phased settlement east of Milton (HE001);
- Horningsea kilns, site of (HE002);
- Car Dyke (HE003); and
- Waterbeach Abbey (site of) (HE004).

3.1.12 The nearest of these is the site of the Horningsea Kilns (HE002), which is approximately 200m south of the Scheme Order Limits.

3.1.13 A further 36 scheduled monuments were identified within the ZTV. These are discussed within the gazetteer in Gazetteer of Assets – Historic Environment (Appendix 13.2, App Doc Ref: 5.4.13.2). All archaeological assets within the 1km and 500m the study areas are shown on Figures 13.1 - 13.15 (see Book of Figures, Historic Environment, 13.1 to 13.15, App Doc Ref 5.3.13).

3.1.14 There are 21 monuments recorded in the CHER within the Scheme Order Limits. An additional 192 assets are identified by the CHER within the 500m study area. These are detailed in the gazetteer in Gazetteer of Assets – Historic Environment (Appendix 13.2, App Doc Ref: 5.4.13.2).

3.1.15 Archaeological potential within land required for the construction of the proposed WWTP and landscape masterplan relates primarily to the identified late Bronze Age to early Iron Age settlement activity. There is also potential for additional remains associated with the cremated remains found in this area. There is low potential for late Mesolithic or early Neolithic remains, based on an in-situ deposit identified during trial trenching. There is some potential for remains relating to medieval agriculture, but this potential mostly relates to the post-medieval and modern periods.

3.1.16 Archaeological potential within the land required for the construction of the waste water transfer tunnel relates to medieval and post-medieval agriculture. A Roman trackway, recut in the medieval period, has also been identified here. A medieval or post-medieval windmill has also been identified.

3.1.17 Archaeological potential within the land required for the construction of the final effluent pipeline and the outfall relates to post-medieval coprolite mining. Trial trenching has identified the extent of mining in this area, which has removed any earlier remains present within the final effluent corridor. This is similar for the route of the Waterbeach pipeline, which has also been heavily affected by post-medieval coprolite mining.

3.1.18 In the more waterlogged parts of the study area such as around the River Cam, there is potential for geoarchaeological and palaeo-environmental evidence. Layers of peat and deposits from marine inundations can preserve evidence of the past environment, such as vegetation and pollens, which demonstrate how land use has changed over time. However, this potential is very low within the Scheme Order Limits, in part due to historical mineral extraction and the late (mostly Holocence) date for the formation of the alluvial deposits in these areas.

Built heritage

3.1.19 There are no designated built heritage assets situated within the Scheme Order Limits. Poplar Hall, a Grade II listed early 17th century timber-framed farmhouse, is the nearest listed building to the Scheme Order Limits. Although enclosed by the Scheme Order Limit, the works near Poplar Hall will be limited to temporary activities associated with the tunnelling of the wastewater transfer tunnel. It is located approximately 900m south-west from the proposed WWTP.

3.1.20 There are two conservation areas which lie partially within the Scheme Order Limits: Baits Bite Conservation Area (HE095) and Fen Ditton Conservation Area (HE096). Baits Bite Conservation Area contains the land required for the proposed wastewater transfer tunnel and Outfall to the River Cam. Fen Ditton Conservation Area contains part of the and required for the wastewater transfer tunnel and southern extent of the Waterbeach pipeline. An additional three conservation areas lie within the 1km study area.

3.1.21 There are no non-designated built heritage assets within the Scheme Order Limits. However, 21 non-designated built heritage assets identified within the 500m study area.

3.1.22 There are 457 listed buildings and 18 conservation areas situated outside of the study area but identified by the ZTV. Desk-based analysis of the potential impacts caused by the Proposed Development have narrowed down this group of assets to 69 listed buildings and four conservation areas, which have the potential to be impacted. These have been assessed individually through site survey setting assessments, which have scoped out the potential to impact these assets. The reason each individual asset has been scoped out is given in Historic Environment Impact Assessment Tables (Appendix 13.4, App Doc Ref: 5.4.13.4). Therefore, no assets within the ZTV but outside the 1km study area have been further considered or discussed within this ES.

3.1.23 These are discussed within the gazetteer in Gazetteer of Assets – Historic Environment (Appendix 13.2, App Doc Ref: 5.4.13.2). All heritage assets within the 1km and 500m the study areas are shown on Built heritage Figures 13.1- 13.15, (see Book of Figures, Historic Environment, 13.1 to 13.15, App Doc Ref 5.3.13).

Historic landscape

3.1.24 There are two designated historic landscape assets which are partially within the Scheme Order Limits (HE095 and HE096) and an additional three conservation areas

lie within the 1km study area. These are all considered above under built heritage. There are no additional designated historic landscapes within the 1km study area.

3.1.25 The Grade II* registered park and garden of Anglesey Abbey (HE181) falls partially within the ZTV (2km north-west of the Scheme Order Limits). In addition, 900m east of the Scheme Order Limits is the non-designated parkland (HLCA62) associated with the Grade II* listed building Quy Hall (HE012). The Proposed WWTP is located 1.3km west of HLCA62 This historic landscape asset falls partially within the ZTV.

3.1.26 A County level Historic Landscape Characterisation exercise has not been undertaken for Cambridgeshire. Therefore, a characterisation exercise was undertaken for the Proposed Development to better understand the nature of the historic landscape within the study area. The characterisation exercise identified 71 distinct areas within 1km of the Scheme Order Limits, which are detailed in Historic Landscape Characterisation (Appendix 13.3, App Doc Ref: 5.4.13.3). They fall predominantly into a few broad types, which are summarised below:

- agricultural landscape – which mostly comprises planned fields from post-medieval enclosure of the reclaimed fen, or fields amalgamated in the modern period by removing earlier boundaries; there are some remnants of medieval field patterns;
- settlements – which mostly comprise small linear villages with medieval origins (including conservation areas) but also include the northern suburban edge of Cambridge;
- designed landscapes – comprising post-medieval pleasure grounds and gardens, including those described above; and
- infrastructure – such as the A14 and railways.

3.1.27 The area of land required for the construction of the proposed WWTP, including the access road and landscape masterplan (HLCA22), is located in a rural landscape that largely owes its character to late post-medieval enclosure and modern agricultural practices. However, character elements of earlier landscapes do survive. The area is located on low chalklands at the Fen edge and includes the eastern fringe of a low hill called Honey Hill. This is situated at the point where the River Cam Valley widens out into the Cambridgeshire fens.

3.1.28 In the north of the study area, the Fens were formerly a wetland landscape, with interconnecting channels/creeks and meres that formed during marine inundation episodes in prehistory. As marine inundation ceased, peat then formed extensively across low-lying areas, through to the early post-medieval period. Therefore, historic settlement focused on areas of relative high ground called Fen Islands. The village of Horningsea and the settlement at Eye Hall are both situated on such islands with Stow-cum-Quy Fen and Queen's Fen situated to the east and north-east and forming part of the wider Bottisham Fen (Wareham & Wright, 2002). From the early 17th century, large scale attempts were made to drain the fens with parts of Stow-cum-Quy Fen and Queen's Fen being allocated under an Act of Parliament to 'the

Adventurers' in 1652 (Wareham & Wright, 2002). Today, this area comprises small villages with medieval cores with post-medieval field patterns laid between them. The villages in the study area are focused along the Cam. The river has been navigated since at least the Roman period and is a key feature of the historic landscape. Near Stow-cum-Quy is Quy Lode (HLCA69), an artificial waterway. The Lode may date to the Roman period and enabled the transport of goods across the fens and along the Cam.

3.1.29 In the south-west of the study area are the fringes of Cambridge, including the existing WWTP, industrial estates, commercial estates and suburban fringe housing. The modern A14 (HLCA66) and the Fen Line Railway (HLCA34) also cut through the landscape.

3.2 Future baseline

3.2.1 Cumulative effects are those arising from impacts of the Proposed Development in combination with impacts of other proposed or consented development projects that are not yet built or operational. An assessment of cumulative effects for Historic environment has been completed and is reported in Volume 5b, Chapter 212.

3.2.2 Future changes to the baseline for historic environment could also include updates to the list of designated heritage assets, for example, additional designations of scheduled monuments, listed buildings or amendments to descriptions of the heritage assets and/or areas covered by the existing designations.

3.2.3 No changes in statutory legislation on historic environment issues are currently anticipated, although this could alter at any time. Additional guidance may be issued by national and/or statutory advisors, or others, including guidance on the assessment process.

3.2.4 For historic environment, no residual cumulative effects have been identified.

Impacts of climate change on future baseline

3.2.5 Climate change can affect the value of heritage assets. For example, changing water tables can cause archaeological remains to become dried out or newly submerged which can affect their survival. Extreme weather conditions can affect the condition of historic buildings. Historic landscapes can also suffer from extreme weather, changing water levels and causing the loss of key planting.

3.2.6 No specific future baseline changes relating to climate change with regard to the Historic Environment have been identified which would alter the assessment in this ES.

4 Assessment of Effects

4.1.1 The Section presents the assessment of effects and sets out the preliminary assessment that takes into account primary and tertiary mitigation in determining effects, then considers secondary mitigation and the assessment of residual effects.

4.2 Construction phase

Proposed WWTP

4.2.1 This Section sets out the assessment of effects in relation to the proposed WWTP including the landscaping proposals, final effluent pipeline, the outfall, waste water transfer tunnel and new access connecting with the B1047 Horningsea Road.

4.2.2 An individual impact assessment for each identified asset is provided in Historic Environment Impact Assessment Tables (Appendix 13.4, App Doc Ref: 5.4.13.4). In this Section, impacts to assets are grouped for discussion to aid understanding.

Temporary construction effects

4.2.3 The temporary impacts from construction that would be experienced by all heritage assets within the study areas are given in Gazetteer of Assets – Historic Environment (Appendix 13.2, App Doc Ref: 5.4.13.2). Temporary construction effects are most pertinent to the following assets.

Sensitivity of receptor

4.2.4 Baits Bite Lock Conservation Area (HE095) is considered to be of medium value. It comprises part of the River Cam around Baits Bite Lock (HE1201), including the riverbanks, and an area of farmland containing a small number of farmhouses, cottages, some of which are listed Grade II, and Grade II* Biggin Abbey (HE011, considered separately below). It is crossed by multiple public footpaths, these footpaths, including a historic routeway to a crossing of the Cam, enable appreciation of the asset. The asset's heritage value is derived from the architectural interest of buildings within it, like Biggin Abbey. It is also derived from the engineering and architectural interest of Baits Bite Lock itself and how this demonstrates the manipulation of the Cam for transport. It also has archaeological interest from medieval and post-medieval agricultural remains, heightened by the continuing use of fields in the conservation area for this purpose.

4.2.5 The character of the conservation area is rural, but its setting is dominated by the A14 which is a considerably urbanising feature. Despite this, views over the River Cam and surrounding farmland enable an understanding of the historic, rural and agricultural context of the conservation area. The relationship to the River Cam makes a substantial contribution to the asset's value, as the historic navigation of the river is closely tied to the historical development of the conservation area.

4.2.6 Biggin Abbey (HE011) is a Grade II* listed building, and is considered to be of high heritage value. It is the former summer residence of the Bishop of Ely and has origins in the 14th century or earlier. Its value is derived from its architectural and historic

interest, as well as the archaeological interest of its fabric. It's immediate setting is rural in character, but its wider setting has been altered by modern infrastructure including the A14 approximately 280m to the south. The building is surrounded by farmland on the outskirts of Horningsea to the banks of the River Cam which is encompassed by Baits Bite Lock Conservation Area (HE095). Biggin Abbey also has limited views over the farmland beyond B1047 Horningsea Road approximately 400m to the east, a historic route which is today a fairly busy commuter route. The building has a historic relationship with the surviving agricultural land within the parish, which would have been farmed under the diocese and likely served the Bishop's rural retreat. Views over the surrounding farmland contribute to an understanding of Biggin Abbey's role as part of a rural agricultural manor of the Bishops of Ely. The introduction of modern infrastructure has altered the rural character of the wider setting of the building. This is especially relevant to the A14, the presence of light and noise from vehicles on this road reduces the contribution made by setting to the heritage value of the asset. Other modern elements, such as electricity pylons in the surrounding fields, have also altered the character of the rural setting, but to a lesser extent. Despite modern infrastructure, the setting makes a positive contribution to its heritage value as it enables the asset to be understood in its historic context of rural fen-edge farmland.

4.2.7 Fen Ditton Conservation Area (HE096) is considered to be of medium heritage value. It comprises the core of the settlement of Fen Ditton and farmland surrounding to the banks of the River Cam to the west. It retains the character of a rural agricultural settlement, containing Grade II listed historic houses and a Grade I listed church in the central residential streets, and Grade II listed farmhouses (including Poplar Hall (HE040), discussed separately below) and a post-medieval hall and grounds on the periphery of the village. Its heritage value is derived from the architectural interest of its buildings and historic interest as the medieval core of the settlement. It also has archaeological interest, especially relating to early medieval remains. Its setting includes farmland on the fringe of Cambridgeshire and the River Cam. To the north it is bounded by the A14 and Baits Bite Lock Conservation Area (HE095). To the south it meets the Riverside and Stourbridge Conservation Area (HE100). Despite the presence of the roads, the setting retains rural character and makes a positive contribution to the heritage value of the asset.

4.2.8 Poplar Hall (HE040) is a Grade II listed building which is considered to be of high heritage value. It is a 17th century, timber-framed farmhouse. Its heritage value is derived from its architectural and historic interest, as well as the archaeological interest of its fabric. Poplar Hall is set in a farmyard within agricultural land on the outskirts of Fen Ditton. Outward views are mostly enclosed by agricultural outbuildings and mature trees, but there are views over the farmland to the east. The A14 is located 115m north, and the presence of noise and light pollution from this alters the otherwise rural character of the setting and reduces the contribution this setting makes to heritage value. Despite this, the setting makes a positive contribution to heritage value, as the farmland allows the historical purpose and context of the asset to be appreciated.

4.2.9 Horningsea Conservation Area (HE097) is considered to be of medium heritage value. It encompasses the historic core of the village along Horningsea Road and St John's Lane, as well as farmland to the west which extends to the banks of the River Cam. It has a rural character as a small agricultural settlement on the edge of the rural farmland of the south Cambridgeshire fens. Its heritage value is derived from the architectural interest of its buildings and historical interest as the medieval core of the settlement. Its setting includes the River Cam and farmland on the fen edge and makes a positive contribution to its heritage value, providing context to the history and development of the settlement.

4.2.10 Waterbeach Conservation Area (HE099) is considered to be of medium value. It captures the historic core of the settlement, centered around the High Street, Chapel Street and Station Road. Its heritage value is derived from the architectural interest of its buildings and historical interest as the historic core of the settlement. The conservation area is slightly busier than others in the study area, due to the larger settlement size, but retains rural village character. The setting of the conservation area includes the modern suburban expansion of the settlement. It also includes the former RAF Waterbeach to the north, within which the Waterbeach WRC is historically associated, and farmland in the fen edge. This setting makes a positive contribution to heritage value.

Magnitude of impact

4.2.11 Baits Bite Lock Conservation Area (HE095) is partially within the Scheme Order Limits; it includes the final effluent pipeline construction corridor, and a temporary construction compound will be sited within it. There will be a temporary change in the character of the conservation area due to the presence of the construction compound and from construction activity associated with the final effluent pipeline and the outfall to the River Cam. Construction would introduce noise, light and visual intrusion from the presence of machinery and activity in the construction compounds into the conservation area. This will temporarily alter the character of the rural farmland. However, this change will be experienced alongside existing noise and visual intrusion from the A14, which is dominant within the setting of the asset. In addition, a footpath through the conservation area would be temporarily diverted during construction, altering the way people engage with and appreciate the heritage asset. This would result in a temporary moderate adverse impact on the conservation area during construction.

4.2.12 Biggin Abbey (HE011) would experience a temporary construction impact on its heritage value due to the presence of a construction compound and of construction activities 110m south. This will be within an area of existing farmland during the construction of the final effluent pipeline and outfall. These activities will introduce additional noise and presence of machinery and light pollution into the asset's setting. Temporary construction activities associated with the proposed WWTP will also be visible in views beyond Horningsea Road. This would alter the ability to appreciate the rural agricultural character of the asset's setting and therefore temporarily adversely impact its heritage value. This would result in a temporary minor adverse impact.

4.2.13 Fen Ditton Conservation Area (HE096) is partially located within the Scheme Order Limits as it is crossed by the route of the waste water transfer tunnel and southern extent of the Waterbeach pipeline. A temporary construction compound would be sited immediately adjacent to the conservation area at the Shaft 4 location, which is near Poplar Hall. Construction activity would occur within the conservation area itself. The shaft is a temporary structure and the area will be reinstated after its use. There will be a temporary change in the character of the conservation area from the presence of machinery and from the noise, light and visual intrusion of construction activities within the conservation area. There will also be change within its setting from the presence of the construction compound. This will temporarily alter the character of the rural riverside farmland in the north of the conservation area. This will amount to a temporary minor adverse impact.

4.2.14 Poplar Hall (HE040) will experience a temporary construction impact due to the presence of a site compound 60m to the south. The noise, light and movement associated with this will alter the rural character of its setting, which would result in a temporary minor adverse impact.

4.2.15 Horningsea Conservation Area (HE097) will experience a temporary impact to its heritage value from construction. This is due to the presence and noise of construction works in the north of the conservation area and within the countryside in the vicinity of the village. Construction traffic will not be routed through the conservation area, but would be present within its setting, which would result in a temporary minor adverse impact.

4.2.16 Waterbeach Conservation Area (HE099) will experience a short term temporary impact from the presence of construction traffic on routes through the village. Construction traffic routes would include Chapel Street and Station Road within the conservation area and Bannold Road/Denny End Road to the immediate north. The additional traffic will alter the character of the village, as well as the suburban character of its setting to the north. This will be urbanising and reduce the ability to understand the rural and agricultural context of the village core. This would result in a temporary negligible adverse impact.

Significance of effect

4.2.17 The impacts to Baits Bite Lock Conservation Area (HE095), Biggin Abbey (HE011) and Poplar Hall (HE040) amount to a medium-term temporary and reversible moderate adverse effect which is **significant.**

4.2.18 The impacts to Fen Ditton Conservation Area (HE096), Horningsea Conservation Area (HE097) and Waterbeach Conservation Area (HE099) amount to a medium-term temporary and reversible negligible adverse effect which is **not significant.**

Secondary mitigation or enhancement

4.2.19 The following measures would further mitigate the impact to Baits Bite Lock (HE095) and Fen Ditton (HE097) Conservation Areas. These are set out in the CoCP Part B (Appendix 2.2, App Doc Ref 5.4.2.2):

- The construction compounds within Baits Bite Lock and Fen Ditton Conservation Areas will be screened by a solid site hoarding to reduce noise, light and visual intrusion.

- Noise and vibration levels will be monitored throughout the works and construction working areas (see also Chapter 17: Noise and vibration, (App Doc Ref: 5.2.17).

4.2.20 Through the application of these measures, the impact would be reduced to minor adverse with the resulting effect therefore assessed as slight adverse and **not significant.**

4.2.21 There are no secondary mitigation measures relevant to Fen Ditton Conservation Area (HE096), Horningsea Conservation Area (HE097) and Waterbeach Conservation Area (HE099) and the effect remains as negligible adverse and is **not significant**.

Residual effect

4.2.22 All impacts and effects would be temporary and reversible, therefore no residual significant effects have been identified.

Permanent construction effects on archaeological remains

4.2.23 The impacts from construction that would be experienced by archaeological assets within the study areas are provided in the Gazetteer of Assets - Historic Environment (Appendix 13.2, App Doc Ref: 5.4.13.2).

Sensitivity of receptor

4.2.24 Archaeological remains with the potential to experience a permanent impact as a result of construction have also been identified by surveys undertaken for the Proposed Development. Trial trenching identified the following within the proposed WWTP and landscaping footprints:

- a single feature was identified as having an in-situ late Mesolithic or Neolithic deposit (associated with HE1308 and of medium heritage value);

- late Bronze Age to Iron Age settlement activity (HE1307, HE1308, HE1328 and HE1329), indicating remains of medium heritage value; and

- two cremations (HE3109 and HE1310) were also recovered and may indicate the potential for further remains, which would have medium heritage value.

4.2.25 The area of the proposed WWTP and associated landscaping has the potential to contain further archaeological remains. These archaeological remains, if present, are considered to be of medium heritage value.

4.2.26 Geophysical survey and trial trenching identified the following within the waste water transfer corridor:

- remains relating to medieval and post-medieval agriculture (HE1306), of low heritage value;
- post-medieval windmill (HE1050), of low heritage value; and
- a recut Roman trackway (HE1304), also of low heritage value.

4.2.27 Archaeological potential within the wastewater transfer tunnel relates to medieval and post-medieval agricultural archaeology, which is considered to be of low heritage value.

4.2.28 Remains within the final effluent pipeline and area of the outfall structure are those relating to post-medieval coprolite mining. These remains are of negligible heritage value. This mining activity removed any earlier remains which may have been present within the construction corridor.

Magnitude of impact

4.2.29 Archaeological remains within the footprint of the proposed WWTP, surrounding earth bank and landscaping area will be removed by the construction of the Proposed Development. This includes HE1307, HE1308, HE1328 and HE1329 and remains associated with HE3109 and HE1310. This is assessed as a major adverse impact as they would be completely removed.

4.2.30 Archaeological remains within the footprint of shafts for the waste water transfer corridor and at the tunnel's entrance and exit will be removed, however it is noted that nothing of archaeological interest has been identified at these locations to date. For most of the tunnel length, the excavations proposed would be well below the archaeological horizon and no impact to remains above is anticipated. The windmill mound (HE1050) and trackway (HE1304) identified in this area would be impacted by the waste water transfer tunnel construction corridor. Where remains would need to be removed, a moderate adverse impact is anticipated as the construction footprint would only affect part of the asset, which would still be legible.

4.2.31 Archaeological remains that are present within the construction corridor and footprint of the new outfall structure will be removed during construction. However, this location represents a small part of an extensive area of coprolite mining (HE1303), which will have already removed archaeological remains. Therefore, there is an anticipated moderate adverse impact, to the coprolite mining remains.

Significance of effect

4.2.32 Due to the moderate heritage value of the remains that may be present and the impact of complete removal, impacts to archaeological remains within the footprint of the proposed WWTP and associated landscaping are assessed as resulting in a large adverse effect which is **significant.**

4.2.33 Potential impacts to archaeological remains from construction of the waste water transfer corridor have been assessed as resulting in a slight adverse effect which is **not significant**.

4.2.34 Potential impacts to archaeological remains that may be present within the new outfall construction corridor have been assessed as resulting in a neutral effect due to the negligible heritage value of archaeological remains (HE1303).

Secondary mitigation or enhancement

4.2.35 The following measures are required to address the potential impacts associated with the proposed works and buried archaeological remains. These measures will be set out in the AIMS.

- Archaeological remains which will be impacted by the proposed development will be subject to an additional programme of archaeological investigation and recording to be agreed with CHET.

4.2.36 The investigation and recording of remains will allow for their understanding. Publicly accessible dissemination of this knowledge will offset the permanent loss of the archaeological remains. However, the irreplaceable resource will still be lost. Therefore, the effect remains as a large adverse effect and is significant.

Residual effect

4.2.37 The residual effect remains as a large adverse effect and is **significant**.

Permanent construction effects on built heritage and historic landscape assets

4.2.38 The impacts from construction that would be experienced by heritage assets within the study areas are given in Gazetteer of Assets - Historic Environment (Appendix 13.2, App Doc Ref: 5.4.13.2).

Sensitivity of receptor

4.2.39 Baits Bite Lock Conservation Area (HE095) and Horningsea Conservation Area (HE097) as described above, are considered to be of medium heritage value.

4.2.40 Biggin Abbey (HE011) as described above, is considered to be of high heritage value.

4.2.41 The proposed WWTP would be sited within HLCA22, Honey Hill North (Appendix 13.3, App Doc Ref 5.4.13.3: Historic Landscape Characterisation). The character of this HLCA consists of planned enclosure and amalgamated fields dating to the late post-medieval period. There are also earthwork and cropmark remains of ridge and furrow, which indicate earlier medieval farming practices. HLCA22 has been assessed as having low heritage value due to the time depth of the landscape as presently represented and the nature of activity it represents.

Magnitude of Impact

4.2.42 Baits Bite Lock Conservation Area (HE095) would experience an impact from the presence of permanent structures associated with the project. There would be a permanent, physical impact due to the construction of riverbank protection works and a new outfall structure within the conservation area. The introduction of built infrastructure into a more organic stretch of riverbank would alter the character of the conservation area and the relationship between the farmland and River Cam.

The visual intrusion of the new outfall structure will permanently alter the riverbank and farmland, but this would be minimal.

4.2.43 There would be a change within the setting of Baits Bite Lock Conservation Area (HE095) from the introduction of the proposed WWTP into the landscape approximately 850m beyond Biggin Abbey. The tallest elements of the proposed WWTP would be approximately 1km to its east. Although most key views within the conservation area are focused on the Cam itself, the Conservation Area Appraisal notes an important view eastward encompassing Biggin Abbey. The introduction of the Proposed Development in land east of the asset, would slightly detract from its prominence in these eastward views. Furthermore, the agricultural land surrounding the conservation area, which contributes to its rural character, would be altered by the Proposed Development.

4.2.44 Farmland west of the conservation area will be altered by the construction of the proposed WWTP. Planting in accordance with the landscape masterplan will provide screening and filtering of views towards the proposed WWTP and soften its appearance. However, the introduction of the planting will also alter the character of what is presently large fields with minimal planting outside of hedgerows. The Proposed Development will reduce the openness of views over the landscape in this location. The presence of the earth bank and planting will truncate views, altering the largely flat, agricultural, fenland character of the existing landscape. These potential changes can be understood from relevant representative viewpoints within Chapter 15: Landscape and Visual Amenity (App Doc Ref: 5.2.15); Viewpoints 23 and 24. Changes to the setting of Baits Bite Lock Conservation Area will reduce the contribution that the setting makes to its heritage value. The changes to the character and setting of Baits Bite Lock Conservation Area will result in a permanent minor adverse impact to the conservation area.

4.2.45 There will be a permanent impact on the heritage value of Biggin Abbey (HE011) as a result of changes within its setting from the Proposed Development. The introduction of the proposed WWTP will alter the agricultural character of the Abbey's setting in this particular location. Although the landscape planting and earth bank will reduce the visual intrusion of the proposed WWTP, these elements will themselves truncate views eastwards from the asset. A representative viewpoint from the asset can be found in Chapter 15: Landscape and Visual Amenity (App Doc Ref: 5.2.15); Viewpoint 24. These potential impacts have been assessed as minor adverse.

4.2.46 Alterations to Horningsea Road will further urbanise the historic route and create greater severance between the Abbey and landscape to the east. This change in setting will reduce the ability to view the asset's historic connection with the wider agricultural landscape and understand its historic context as a rural retreat. This will result in a reduced contribution to the heritage value of the asset in terms of its setting, which has been assessed as a minor adverse impact.

4.2.47 Horningsea Conservation Area will experience a permanent impact on its heritage value as a result of change within its setting. There are few outward views towards the proposed WWTP from the conservation area due to intervening built

development and vegetation (see also Chapter 15: Landscape and Visual Amenity (App Doc Ref: 5.2.15) regarding the ZTV). The introduction of the proposed WWTP and associated landscaping will alter the character of this part of the setting of the conservation area. An open landscape of agricultural fields between Horningsea and the A14, will be urbanised by the introduction of the proposed WWTP infrastructure. Views over this landscape, where they are present within the conservation area, will be truncated by the introduction of the WWTP infrastructure and by the associated landscaping. This permanent change relates only to part of the setting of the conservation area to its south and south-east, and the most immediately adjacent fields will be unaltered. Therefore, this has been assessed as a negligible adverse impact.

4.2.48 The character of HLCA22 will be permanently altered by the construction of the proposed WWTP and associated landscaping. The open agricultural landscape will be urbanised by the presence of the proposed WWTP. The planned landscaping for the Proposed Development will soften the visual intrusion of these elements, but will also act to alter the local character of the area. These changes would apply to approximately half of the HLCA. The remainder of the HLCA would not be directly impacted and the better surviving and older ridge and furrow would be unaffected. Therefore, this is anticipated to result in a moderate adverse impact.

Significance of effect

4.2.49 The significance of effects has been assessed as permanent slight adverse for Baits Bite Lock Conservation Area (HE095) and Horningsea Conservation Area (HE097).

4.2.50 The potential effect to Biggin Abbey (HE011) have been assessed as permanent moderate adverse which is **significant**.

4.2.51 Potential effects to HLCA22 have been assessed as permanent moderate adverse which are **significant**.

Secondary mitigation or enhancement

4.2.52 The following measures have been developed to address the permanent construction impacts that have been identified in relation to built heritage and historic landscape assets:

- The LERMP, which includes the maintenance of landscape planting to ensure it reaches maturity and survives.
- Vibration will be monitored during construction, as described in the CoCP, which will further mitigate the potential for any asset to be impacted permanently by vibration.

4.2.53 The application of these measures would not reduce the magnitude of the potential impacts associated with the introduction of the landscape planting (see Section 2.6: Assumptions and Limitations), however planting will be assured to survive to maturity.

4.2.54 Permanent impacts from vibration are not anticipated due to the distance between the heritage assets and construction areas. However, the monitoring of vibration levels provides additional assurance to this as a measure of best practice.

4.2.55 There are no secondary mitigation measures that can be applied to address the potential impacts on HLCA22, therefore the effect remains moderate adverse, which is considered to be **significant.**

Residual effect

4.2.56 The residual effects remain assessed as permanent slight adverse on Baits Bite Lock Conservation Area (HE095) and Horningsea Conservation Area (HE097) and a permanent moderate adverse effect to Biggin Abbey (HE011). The residual effect on HLCA22 remains moderate adverse, which is considered **significant**.

Waterbeach pipeline

4.2.57 This section sets out the assessment of effects in relation to the construction of the Waterbeach pipeline which consists of a transfer section running from the north near Waterbeach to Low Fen Drove Way, a section crossing the area of land required for the construction of the proposed WWTP, a section south of the A14 which connects to the area of land where the existing Cambridge WWTP is located.

Temporary construction effects

4.2.58 The temporary impacts from construction experienced by heritage assets within the study areas are provided in the Gazetteer of Assets - Historic Environment (Appendix 13.2, App Doc Ref: 5.4.13.2). Temporary construction effects are pertinent to the following receptors.

Sensitivity of receptor

4.2.59 Assets that would be affected include:

- Eye Hall (HE080), Barn to East South East of Eye Hall (HE081) and Granary to East of Eye Hall (HE082) (all Grade II listed and of high heritage value) are located approximately 100m south of the Scheme Order Limits. These assets are set in relation to one another within the flat agricultural Fen-edge landscape north-east of Horningsea;

- Horningsea Conservation Area (medium heritage value), which is located to the north-west of the Scheme Order Limits, as described above; and

- Waterbeach Conservation Area (medium heritage value) to the north-west of the Scheme Order Limits, as described above.

Magnitude of impact

4.2.60 Temporary impacts from construction activities associated with the Waterbeach pipeline will be comparable to those described above for the construction of the proposed WWTP (paragraph **Error! Reference source not found.**. The same assets

will be broadly affected due to shared construction traffic routes and overlap of activities. The construction of the Waterbeach pipeline would introduce construction activity in proximity to Eye Hall (HE080) and associated assets. Noise and light will be introduced from the presence of construction machinery on the Fen-edge farmland to the east. This is assessed as resulting in minor temporary adverse impacts.

4.2.61 Impacts to Horningsea Conservation Area (HE097) and Waterbeach Conservation Area (HE099) from the presence of construction traffic and plant have been described and considered above.

Significance of effect

4.2.62 The potential impacts associated with the construction of the Waterbeach pipeline have been assessed as resulting in negligible or slight temporary adverse effects which are **not significant.**

Secondary mitigation or enhancement

4.2.63 There are no secondary mitigation measures relevant to these medium-term temporary impacts and the effect remains slight adverse, which is **not significant**.

Residual effect

4.2.64 The residual effect is assessed as slight medium-term temporary adverse effect, which is **not significant**.

Permanent construction effects on archaeological remains

Sensitivity of receptor

4.2.65 Remains within the construction corridor for the Waterbeach pipeline are those relating to post-medieval coprolite mining. These remains are of negligible heritage value. The historic mining activity would have removed any earlier remains that may have been present within the construction corridor north of the A14. Evidence of coprolite mining (HE1303) is considered to be of negligible heritage value. South of the A14, the route of the Waterbeach pipeline would intersect features described and considered above (medieval and post-medieval enclosure ditches HE1306 and the re-cut Roman trackway, HE1304).

Magnitude of impact

4.2.66 Archaeological remains within the construction corridor for the Waterbeach pipeline will be removed during construction, which represents a large adverse impact.

Significance of effect

4.2.67 The significance of effects associated with the construction of the Waterbeach pipeline has been assessed as neutral due to the negligible value of remains.

Secondary mitigation or enhancement

4.2.68 No further mitigation is proposed due to the low heritage value of the impacted remains anticipated to be present within the construction corridor. These remains will not be included in the AIMS.

Residual effect

4.2.69 The residual effect of the construction of the Waterbeach pipeline is assessed as neutral, which is **not significant.**

Monitoring

4.2.70 During the construction phase, monitoring will be conducted in accordance with Section(s) 6.4 of the COCP Part A (Appendix 2.1, App Doc Ref: 5.4.2.1). This requires the development of the AIMS, which will be agreed with CHET and will specify any monitoring of works required as a result of the potential to impact archaeological remains.

4.3 Operation phase

Proposed WWTP

4.3.1 This Section sets out the assessment of effects in relation to the operation and maintenance following commissioning of the proposed WWTP. This includes the landscaping proposals, the final effluent pipeline and the new outfall, transfer tunnel and the new access that would connect with the B1047 Horningsea Road.

Operation of the proposed WWTP within the setting of heritage assets

4.3.2 The impacts from operation experienced by heritage assets within the study areas are provided in the Gazetteer of Assets - Historic Environment (Appendix 13.2, App Doc Ref 5.4.13.2).

Sensitivity of receptor

4.3.3 The following key receptors have been identified as being potentially affected during operation of the Proposed Development:

- Biggin Abbey (HE011), Grade II* listed, high heritage value;
- Poplar Hall (HE040), Grade II listed, high heritage value;
- Horningsea Conservation Area (HE097), medium heritage value;
- Fen Ditton Conservation Area (HE096), medium heritage value; and
- Baits Bite Lock Conservation Area (HE095), medium heritage value.

4.3.4 The settings and heritage value of the assets is described under Section 4.2: Construction Phase.

Magnitude of impact

4.3.5 2.9Operation of the Proposed Development will result in negligible adverse impacts to the assets listed above. The impacts would occur as a result of changes within their settings which will reduce the contribution the settings make to the heritage value of the assets.

4.3.6 The operation of the Proposed Development will require new lighting within car parks and along the B1047 Horningsea Road, as well as sensor-activated area lighting. The lighting mitigation outlined in Section 2.9 will reduce the light spill, but not entirely This is also notable with regard to the lighting on Horningsea Road, which will meet National Highways standards and is likely to result in increased lighting of Horningsea Road. . Operation of the proposed WWTP will introduce the movement of vehicles into an area where there is existing traffic from the A14 especially. These changes will further urbanise the character of the settings of heritage assets, which will adversely affect the heritage value of heritage assets in the vicinity through alteration of the rural character of these settings.

4.3.7 Odour contours show that there will be no change in odour within 700m of any of the identified heritage assets. Therefore, no impacts on historic environment receptors, including from change in setting, are anticipated as a result of introduced odour.

Significance of effect

4.3.8 The significance of effect for operation of the WWTP has been assessed as slight adverse effect which is **not signficant.**

Secondary mitigation or enhancement

4.3.9 There are no secondary mitigation measures relevant to operational effects on built heritage and historic landscape assets and the effect remains as slight adverse and is not significant. Measures described in the LERMP (Appendix 8.14, App Doc Ref: 5.4.8.14) will ensure the survival of landscape planting, assuring the measures accounted for in the above assessment (see also Assumptions and Limitations Section 2.6).

Residual effect

4.3.10 The residual effects for operation of the WWTP have been assessed as slight adverse, which is **not significant.**

Waterbeach transfer pipeline

4.3.11 No operational effects on the historic environment are anticipated as a result of the operation and maintenance of the Waterbeach pipeline. Once construction has been completed, the land above the pipeline will be reinstated to previous use.

Monitoring

4.3.12 No monitoring has been identified as being required for the operation of the Proposed Development in relation to the historic environment.

4.4 Decommissioning

4.4.1 This Section reviews the decommissioning activities that would be completed in order to surrender the environmental permit at the existing Cambridge WWTP and decommissioning the redundant Section of the Waterbeach pipeline. Demolition

activities and intrusive works to decommission the existing Cambridge WWTP are considered within the cumulative assessment. Decommissioning of the existing Waterbeach WRC is considered within the cumulative assessment.

4.4.2 There are no operational effects anticipated on the historic environment as a result of decommissioning the existing Cambridge WWTP for the purpose of surrendering the existing permit.

Monitoring

4.4.3 No monitoring has been identified as being required in relation to historic environment during the decommissioning phase.

4.5 Cumulative effects

4.5.1 Cumulative effects are those arising from impacts of the Proposed Development in combination with impacts of other proposed or consented development projects that are not yet built or operational. An assessment of cumulative effects for historic environment has been completed and is reported in Chapter 21: Cumulative Effects Assessment.

4.5.2 No residual cumulative effects have been identified in relation to the historic environment.

4.6 Inter-related effects

4.6.1 Inter-relationships are the impacts and associated effects of different aspects of the construction, operation of the Proposed Development and the decommissioning of the existing Cambridge WWTP on the same receptor. The assessment of inter-related effects is reported in Chapter 21: Cumulative Effects Assessment.

4.6.2 No residual inter-related effects have been identified in relation to the historic environment.

5 Conclusion and summary

5.1.1 The assessment of the historic environment has applied Historic England and GIfA guidance and national and local policy, and is based on information currently available.

5.2 Temporary construction effects

5.2.1 Temporary effects on the historic environment during construction would vary from negligible to moderate adverse prior to mitigation, which would be significant in the case of moderate adverse effects.

5.2.2 During construction there will be a requirement for mitigation measures to be implemented through the application of management plans as specified by the CoCP Part A and B. During construction, there will be controls on vehicle movements so that no construction traffic will be permitted to travel through Horningsea or Fen Ditton.

5.2.3 With the implementation of mitigation measures, the construction effects would be negligible to minor adverse (not significant). The exceptions are Baits Bite Lock Conservation Area (HE095), Biggin Abbey (HE011) and Poplar Hall (HE040) where a temporary moderate adverse effect that would be significant is predicted as a result of change within their settings.

5.2.4 Additional neutral to slight adverse effects which are not significant, are experienced by other assets within the study area due to changes within their settings. These are summarised in Gazetteer of Assets - Historic Environment (Appendix 13.2, App Doc Ref: 5.4.13.2).

5.3 Permanent construction effects

Effects on archaeological remains

5.3.1 The permanent effects of the Proposed Development on archaeological remains as a result of construction would vary from neutral to moderate adverse prior to the application of mitigation. There is the potential for unknown archaeological remains within the Scheme Order Limits. The nature and heritage value of these remains cannot be anticipated in advance of excavation.

5.3.2 During construction, the AIMS will be implemented which will ensure that the knowledge gained from recording, post-excavation assessment and reporting will be disseminated for public benefit. However, it is anticipated that the remains will still be lost as excavation and recording can be a destructive process.

5.3.3 Therefore, moderate adverse significant effects will persist from the partial or complete removal of archaeological remains in the case of four areas of prehistoric settlement activity (HE1307, HE1308, HE1328 and HE1329) and possible further remains relating to two excavated cremations (HE1308 and HE3109).

Effects on built heritage and historic landscape assets

5.3.4 The permanent effects of the Proposed Development on built heritage and historic landscape assets from construction would vary from minor to moderate adverse prior to mitigation.

5.3.5 With the implementation of mitigation measures, the effects would be negligible/ minor adverse (not significant) for all receptors except Biggin Abbey (HE011) where a temporary moderate adverse effect is predicted.

5.3.6 Neutral to slight adverse effects, which are not considered to be significant, have been assessed for other assets within the study area due to changes within their settings. These are summarised in Gazetteer of Assets - Historic Environment (Appendix 13.2, App Doc Ref: 5.4.13.2).

5.4 Operational effects

5.4.1 Overall, the significance of effects would be negligible/minor adverse for the operation of the Proposed Development. Neutral to slight adverse effects which are not considered significant, would be experienced by other assets within the study area due to changes within their settings. These are summarised in Gazetteer of Assets - Historic Environment (Appendix 13.2, App Doc Ref 5.4.13.2).

5.5 Decommissioning effects

5.5.1 No potential impacts on the historic environment are anticipated as a result of decommissioning the existing Cambridge WWTP for the purpose of rescinding the existing Environmental Permit.

5.6 Assessment of harm for designated assets

5.6.1 Using professional judgement and the setting assessments undertaken as part of this ES, it has been identified that the Proposed Development will cause less than substantial harm to designated heritage assets. In particular, there will be less than substantial harm caused to Baits Bite Lock, Horningsea and Fen Ditton Conservation Areas, and the Grade II Listed Poplar Hall and Grade II* Listed Biggin Abbey. With the application of the primary, secondary and tertiary mitigation described in this chapter, it is predicted that the level of harm on these heritage assets will be at the lower end of less than substantial harm.

5.6.2 A summary of potential environmental effects, mitigation and monitoring is provided in Table 5-1. Table 5-2 sets out how mitigation would be secured.

Table 5-1: Summary of historic environment effects

Description of impact	Primary and tertiary measures adopted as part of the project	Magnitude of impact	Sensitivity of receptor	Significance of effect	Additional / secondary mitigation measures	Residual effect significance	Proposed monitoring
Construction							
Temporary change within the setting and/or character of assets (HE011, HE095, HE040, HE096) during construction.	Noise and vibration will be monitored during construction. Some compounds will be screened by a solid site hoarding. This will be detailed in the Construction Environmental Management Plan (CEMP). The lighting proposed will be mounted to minimise the spread of light in the surrounding area. Construction traffic will be routed around rather than through Horningsea Conservation Area.	Negligible to moderate	Medium and high	Minor to moderate (significant)	None appropriate	none	Noise and vibration levels will be monitored throughout the works and construction working areas.
Permanent construction impacts on heritage and historic landscape assets. from change within the setting or to the character of heritage	As described in the Chapter 15: Landscape and Visual Amenity (App Doc Ref: 5.2.15). The land required for the construction of the treated effluent transfer pipelines, following the works, will be returned to its current character.	Negligible to moderate	Low to high	Minor to moderate (significant)	As described in the Chapter 15: Landscape and Visual Amenity (App Doc Ref: 5.2.15).	slight to moderate	None

Description of impact	Primary and tertiary measures adopted as part of the project	Magnitude of impact	Sensitivity of receptor	Significance of effect	Additional / secondary mitigation measures	Residual effect significance	Proposed monitoring
assets (HE011, HE040, HE095, HE096). Change in character of HLCA22.							
Permanent construction impacts from the removal of archaeological remains (HE1303, HE1304, HE1306, HE1307, HE1308, HE1310, HE1328 and HE1329).	A programme of archaeological mitigation will be agreed with CHET.	Moderate to large	Negligible to medium	Neutral to large (significant)	Appropriate recording of archaeological remains where loss is unavoidable	Moderate	None
Operation							
Operational impact on the historic environment. Change within the setting of heritage (HE011, HE040,	The planting design will reduce the visible movement of vehicles within and around the Proposed Development, where possible. This includes the construction of the earthwork bank, which will limit intervisibility between the Proposed Development	Negligible to minor	Medium to high	Minor (not significant)	As described in Chapter 15: Landscape and visual amenity (App Doc Ref: 5.2.15)	Negligible to minor	None

Description of impact	Primary and tertiary measures adopted as part of the project	Magnitude of impact	Sensitivity of receptor	Significance of effect	Additional / secondary mitigation measures	Residual effect significance	Proposed monitoring
HE095 and HE096).	and the surrounding area, reducing the prominence of additional noise and movement within the landscape. In addition, the lighting will be designed to reduce the upward spread of light and to minimise glare, reducing the impact on the surrounding heritage assets. It will also only be switched on when activated by a sensor, or where required for a specific task.						

5.7 Securing mitigation

5.7.1 The delivery of mitigation will be controlled through the 'Development Consent Order (DCO) which:

- identifies parameters within which certain works activities will be located and constructed (e.g. maximum and minimum building dimensions (including below ground), or locational zones);
- sets requirements for construction, operation and maintenance of the Proposed Development to be undertaken in accordance with 'control plans / documents' (including those that are related to compliance with environmental permits); and
- sets requirements for the control of specific issues or works (e.g. time limits around the completion of the outfall construction).

Table 5-2 summarises all mitigation in relation to Historic Environment, how these measures are secured, the party responsible for the implementation of the measure, when the measure would be delivered and any mechanisms to deliver the measure.

Table 5-2: Historic environment mitigation summary

Description of impact	Residual Effect	Mitigation measure	Mitigation type	Secured by	Responsible party	Timing on the provision of the measure	Trigger for the discharge of any related requirement
Construction							
Temporary change within the setting and/or character of assets (HE011, HE095, HE040, HE096) during construction.	Minor to moderate (significant)	The lighting proposed will be mounted to minimise the spread of light in the surrounding area. Measures are set out within Section 7.3 and 7.6 of the CoCP, Part A.	Secondary	Approval and implementation of a Construction Environmental Management Plan secured through a requirement of the draft DCO (App Doc Ref 2.1). Section 7.3 & 7.6, CoCP Part A (Appendix 2.1, App Doc Ref 5.4.2.1) secured through a requirement of the draft DCO (App Doc Ref 2.1)	Appointed contractor(s)	Prior to construction Prior to the commencement of the enabling phase. Prior to the commencement of the enabling phase.	An approved Phasing Plan. An approved CEMP An approved CTMP
Temporary change within the setting and/or character of assets (HE011, HE095, HE040, HE096) during construction.	Minor to moderate (significant)	Construction traffic will be routed around rather than through Horningsea Conservation Area. Measures are set out within Section 7.3 and 7.6 of the CoCP, Part A.	Primary	Approval and implementation of a Construction Environmental Management Plan secured through a requirement of the draft DCO (App Doc Ref 2.1). Construction Traffic Management Plan (Appendix 19.7, App Doc Ref 5.4.19.7), secured	Appointed contractor(s)	Prior to construction Prior to the commencement of the enabling phase.	An approved Phasing Plan. An approved CEMP An approved CTMP.

Description of impact	Residual Effect	Mitigation measure	Mitigation type	Secured by	Responsible party	Timing on the provision of the measure	Trigger for the discharge of any related requirement
				through a requirement of the draft DCO (App Doc Ref 2.1) Section 7.3 & 7.6, CoCP Part A (Appendix 2.1, App Doc Ref 5.4.2.1) secured through a requirement of the draft DCO (App Doc Ref 2.1)			
Permanent construction impacts from change within the setting or to the character of heritage assets (HE011, HE040, HE095, HE096).	Minor to moderate (significant)	As described in Chapter 15: Landscape and Visual Amenity (Application Document Ref: 5.2.15). The landscape master plan will be designed to reduce the visual impact on historic landscape assets and character area	Secondary	Landscape, Ecological and Recreational Management Plan (Appendix 8.14, App Doc Ref 5.4.8.14) which is secured through a requirement in the draft DCO (App Doc Ref 2.1)	Appointed contractor(s)	Prior to start of construction Prior to the commencement of the enabling phase. Prior to the commencement of the enabling phase. Prior to the commencement of construction.	An approved Phasing Plan. An approved CEMP An approved Soil Management Plan An approved LERMP
Removal of archaeological remains	Moderate	Archaeological remains which will be impacted by the Proposed	Secondary	Archaeological Investigation Method Strategy secured through a	The Applicant	Pre-construction and construction	An approved Phasing Plan.

Description of impact	Residual Effect	Mitigation measure	Mitigation type	Secured by	Responsible party	Timing on the provision of the measure	Trigger for the discharge of any related requirement
(HE1303, HE1304, HE1306, HE1307, HE1308, HE1310, HE1328 and HE1329).		Development will be subject to an additional programme of archaeological investigation and recording to be agreed with CHET.		requirement of the draft DCO (App Doc Ref 2.1)		Prior to the completion of the DCO examination period, for inclusion in the DCO requirements.	An approved Archaeological Investigation Method Strategy
Operation							
Change in character of HLCA22 and other HLCAs.	Minor (not significant)	Where possible the land required for the construction of the treated effluent transfer pipelines, following the works, will be returned to its current character.	Primary	Section 7.4, CoCP Part A (Appendix 2.1, App Doc Ref 5.4.2.1) Approval and implementation of a Construction Environmental Management Plan secured through a requirement of the draft DCO (Appendix 2.1, App Doc Ref 2.1). Section 5.4, Outline SMP (Appendix 6.3, App Doc Ref 5.4.6.3) which are secured through requirements of the draft DCO (App Doc Ref 2.1)	Appointed contractor(s)	Construction Prior to the commencement of the enabling phase. Prior to the commencement of construction.	An approved Phasing Plan. An approved CEMP An approved LERMP

Description of impact	Residual Effect	Mitigation measure	Mitigation type	Secured by	Responsible party	Timing on the provision of the measure	Trigger for the discharge of any related requirement
				Approval of the Landscape masterplan in the LERMP (Appendix 8.14, App Doc Ref 5.4.8.14)			
Operational change within the setting of heritage (HE011, HE040, HE095 and HE096) and historic landscape (HLCA69) assets.	Minor (not significant)	The lighting will be designed to reduce the upward spread of light and to minimise glare, reducing the impact on the surrounding heritage assets. It will also only be switched on when activated by a sensor, or where required for a specific task. The landscape master plan will be designed to reduce the visual impact on historic landscape assets and character area.	Primary	Approval of the Design Plans (App Doc Ref 4.9) and Landscape master plan in the LERMP (Appendix 8.14, App Doc Ref 5.4.8.14) Approval and implementation of a Construction Environmental Management Plan secured through a requirement of the draft DCO (App Doc Ref 2.1). Secured through a requirement in the draft DCO (App Doc Ref 2.1) to comply with the Lighting Design Strategy (Appendix 2.5, App Doc Ref 5.4.2.5).	The Applicant	Construction Prior to the commencement of the enabling phase. Prior to the commencement of construction	An approved Phasing Plan. An approved CEMP An approved Lighting Design Strategy

References

Historic England. (2019). *Conservation Area Appraisal, Designation and Management.*

Cambridge City Council. (2018, October). *Cambridge City Council.* Retrieved from Local Plan 2018: https://www.cambridge.gov.uk/media/6890/local-plan-2018.pdf

Chartered Institute for Archaeologists. (2020, October). *Standard and guidance for historic environment desk-based assessment.* Retrieved from Chartered Institute for Archaeologists: [redacted]

Department for Environment, Food & Rural Affairs. (2012, February 9). *Policy paper. National policy statement for waste water.* Retrieved from Gov.uk: https://www.gov.uk/government/publications/national-policy-statement-for-waste-water

Department of Environment, Food and Rural Affairs. (2012, March). *National Policy Statement for Waste Water: A framework document for planning decisions on nationally significant waste water infrastructure.* Retrieved from www.defra.gov.uk: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69505/pb13709-waste-water-nps.pdf

English Heritage. (2008, April). *Historic England.* Retrieved from Conservation Principles, Policies and Guidance: [redacted]

Headland Archaeology. (2021a). *Cambridge Waste Water Treatment Plant, Cambridgeshire: Geophysical Survey Report.*

Headland Archaeology. (2021b). *Waterbeach Growth Pipeline, Cambridgeshire: Geophysical Survey Report.*

Highways England. (2020a). *Design Manual for Roads and Bridges: Cultural Heritage Assessment.*

Highways England. (2020b). *Environmental assessment and monitoring.*

Historic England. (2015, March 27). *Good Practice Advice in Planning Note 2 (GPA2) – managing significance in decision taking in the historic environment.* Retrieved from Historic England: [redacted]

Historic England. (2017, December 22). *Historic Environment Good Practice Advice in Planning: 3 (2nd Edition) - The Setting of Heritage Assets.* Retrieved from Historic England: [redacted]

Historic England. (2019, October 21). *Statements of Heritage Significance: Analysing Significance in Heritage Assets - Advice Note 12.* Retrieved from Historic England: [redacted]

IEMA, CIfA, & IHBC. (2022). *Priciples of Cutural Heritage Assessment.*

Joint Nature Conservation Committee. (2012, July 17). *UK Post-2010 Biodiversity Framework.* Retrieved from Joint Nature Conservation Committee: https://jncc.gov.uk/our-work/uk-post-2010-biodiversity-framework/

Ministry of Housing, Communites and Local Government. (2021, July 20). *Policy paper. National Planning Policy Framework.* Retrieved from Gov.uk: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

South Cambridgeshire District Council. (2018, September). *South Cambridgeshire District Council Local Plan 2018.* Retrieved from South Cambridgeshire District Council: https://www.scambs.gov.uk/planning/local-plan-and-neighbourhood-planning/the-adopted-development-plan/south-cambridgeshire-local-plan-2018/

Wareham, A. F., & Wright, A. (2002). Bottisham: Economic history. *A History of the County of Cambridge and the Isle of Ely: Volume 10, Cheveley, Flendish, Staine and Staploe Hundreds (North-Eastern Cambridgeshire)*, 205-214. Retrieved from [redacted]

Get in touch

You can contact us by:

Emailing at **info@cwwtpr.com**

Calling our Freephone information line on **0808 196 1661**

Writing to us at **Freepost: CWWTPR**

Visiting our website at [redacted]

You can view all our DCO application documents and updates on the application on The Planning Inspectorate website:

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