

National Grid Cable Tunnel Replacement Project

Environmental Statement - Volume III

Chapter 9 Historic Environment - Tilbury

December 2023



Quality information

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9 Historic Environment

9.1 Introduction

- 9.1.1 This chapter assesses the likely significant effects of the Tilbury to Grain and Tilbury to Kingsnorth (TKRE) Cable Tunnel Replacement Project (“the Proposed Development”) on the Historic Environment during the construction and operational phases.
- 9.1.2 This chapter also identifies any additional mitigation measures to prevent, minimise or control likely adverse effects on built heritage and archaeological assets arising from the Proposed Development.
- 9.1.3 This chapter should be read together with the introductory chapters of this Environmental Statement (ES) (ES Volume II, Chapters 1 – 6). This historic environment assessment has been informed by data from other technical chapters in Volume III comprising:
- Chapter 8: Landscape and Visual - Tilbury;
 - Chapter 10: Traffic and Transport - Tilbury; and
 - Chapter 11: Noise and Vibration - Tilbury.
- 9.1.4 This chapter is supported by the following appendices (ES Volume VI) and figures:
- Appendix 9-1: Historic Environment Desk Based Assessment;
 - Appendix 9-2: Desk-Based Geo-archaeological Deposit Modelling Report;
 - Appendix 9-3: Written Scheme of Investigation for Geoarchaeological Deposit Modelling and Borehole Investigation;
 - Figure 9-1: Designated Heritage Assets;
 - Figure 9-2: Non-Designated Heritage Assets; and
 - Figure 9-3: Previous Archaeological Investigations.

9.2 Relevant Legislation, Policy and Guidance

Introduction

- 9.2.1 This assessment has been undertaken taking into account relevant legislation and guidance set out in national, regional and local planning policy (summarised within ES Volume II Chapter 6: Planning Policy). The legislation and policy requirements have informed the preparation of this ES chapter.

Legislation

- 9.2.2 The following pieces of legislation apply specifically to the historic environment assessment:
- Ancient Monuments and Areas Act (1979) (Ref 9-1); and
 - The Planning (Listed Buildings and Conservation Areas Act (1990) (Ref 9-2).

National Policy

- 9.2.3 National Planning Policy relevant to this historic environment assessment are detailed in Table 9-1 below:

Table 9-1: National Planning Policy

Policy Reference	Policy Context
National Planning Policy Framework (NPPF) (Ref 9-2)	Section 16: Conserving and Enhancing the Historic Environment of the NPPF sets out the Government's planning policies for England and how these should be applied to contribute to the achievement of sustainable development.
Planning Practice Guidance (PPG) (Ministry of Housing, Communities and local Government, 2019) (Ref 9-2)	PPG provides further advice and expands on the guidance and policy outlined in NPPF.
Overarching National Policy Statement for Energy (EN-1) (Ref 9-5)	Section 5.9 highlights the potential impacts to the historic environment through the construction, operation and decommissioning of energy infrastructure. EN-1 provides guidance on assessing the impacts to the historic environment in paragraphs 5.9.9 to 5.9.15. The EN-1 2011 version is currently in force until early 2024, when the updated EN-1 (2023) comes in.
National Policy Statement for Electricity Networks (EN-5) (Ref 9-6)	This NPS, together with EN-1, is the primary decision-making guidance document for the Secretary of State when considering development consent applications for Nationally Significant Infrastructure Projects (NSIPs) for electricity networks infrastructure in England and Wales. The EN-5 2011 version is currently in force until early 2024, when the updated EN-5 (2023) comes in.

Local Planning Policy

9.2.4 Local Planning Policies relevant to this historic environment assessment are detailed in Table 9-2.

Table 9-2: Local Planning Policy

Policy Reference	Policy Context
The Thurrock Local Plan (2015) (Ref 9-7)	The Thurrock Local Development Framework (Thurrock Council 2015) was adopted in January 2015 to replace the Thurrock Local Plan 1997. It recognises the significant role the historic environment plays in creating a sense of place and allows links to the historic development of Thurrock, as well as the important cultural and economic roles heritage can provide for the borough. It seeks to prevent loss of the historic environment, protect and achieve broader benefits of the historic environment in the borough.

Guidance

9.2.5 This assessment has been carried out in accordance with the following:

- Historic England Good Practice Advice Note 2: Managing Significance in Decision-taking in the Historic Environment (2015) (Ref 9-8);
- Historic England Good Practice Advice Note 3: The Setting of Heritage Assets (2nd Edition; 2017) (Ref 9-9);
- Historic England Advice Note 12: Statements of Heritage Significance: Analysing Significance in Heritage Assets (2019) (Ref 9-10);
- Institute of Environmental Management and Assessment (IEMA), Principles of Cultural Heritage Impact Assessment in the UK (2021) (Ref 9-11);
- Chartered Institute for Archaeologists (CIfA) Standard and guidance for historic environment desk-based assessment (Ref 9-12); and

- Chartered Institute for Archaeologists (CIfA) Code of Conduct: professional ethics in archaeology (Ref 9-13).

9.3 Consultation

- 9.3.1 A request for an EIA Screening Opinion, supported by an initial version of Appendix 9.1 Desk-Based Assessment was submitted to Thurrock Council in June 2023. In Thurrock Council's Screening Opinion, received 7 July 2023, no comments were made regarding the Historic Environment.
- 9.3.2 Consultation on the scope of the Historic Environment assessment has been undertaken with Historic England and Essex County Council. The comments received from each of these stakeholders has been provided in Table 9-3 below. A summary of all consultation is also provided in ES Volume II Chapter 5: Consultation.

Table 9-3: Historic Environment Consultation

Consultee	Consultation Response
Historic England	In their consultation response within Gravesend Borough Council's screening opinion, received on 31 st July 2023, Historic England supported the key designated assets identified in the screening assessment and highlighted the potential for surviving palaeoenvironmental remains within the Proposed Development site; these were considered to be of high value by Historic England and it was recommended that further consultation be undertaken with Archaeological and Conservation officers at Essex and Kent County Council.
Historic England and Essex County Council	Consultation meetings were held with Historic England, Essex Council and Kent County Council on 29th August and 9th October 2023, during which the potential impacts of the Proposed Development and a staged approach to geoarchaeological deposit modelling and borehole investigation within both Headhouse and Sealing End Compound (SEC) sites were discussed. Written Scheme of Investigations and desk-based assessments have been reviewed and approved by the Archaeological Officer at Essex and Kent County Councils and Historic England's Regional Science Advisor and their comments have been taken into account when finalising the documents.

9.4 Scope and Methodology

Assessment Methodology

- 9.4.1 This section of this chapter presents the following:
- Information sources that have been consulted throughout the preparation of this chapter;
 - The potential impacts considered in the assessment;
 - The methodology behind the assessment of cultural heritage effects, including the criteria for the determination of heritage value (significance) of an asset and magnitude of change from the existing of 'baseline' condition;
 - An explanation as to how the identification and assessment of potential cultural heritage effects has been reached; and
 - The significance criteria and terminology for the assessment of cultural heritage residual effects.
- 9.4.2 The detailed plans and elevations that define the Proposed Development have been reviewed and form the basis of the assessment of likely significant effects on cultural heritage.
- 9.4.3 This assessment has been undertaken in accordance with guidance contained within Energy Policy EN-1 and EN-5.

Information Sources

9.4.4 The following sources of information have been consulted to inform the assessment within this chapter:

- National Heritage List for England (NHLE);
- Essex Historic Environment Data (EHER);
- Ordnance Survey historic mapping data;
- Essex record Office;
- British Geological Survey (BGS) online (<https://www.bgs.ac.uk/geoindex/>);
- Aerial photographs viewed online via the National Collection for Aerial Photographs, Historic England Aerial Photo Explorer and Google Earth;
- Archaeology Data Service (<https://archaeologydataservice.ac.uk>) for information on previous cultural heritage assessments and fieldwork surveys;
- Previous assessments and archaeological investigation reports relating to the Proposed Development (Refer to DBA in ES Volume VI Appendix 9-1: Historic Environment Desk-Based Assessment); and
- Previous geotechnical reports and data for the Site.

Walkover Survey of the Proposed Development

9.4.5 A Site Visit was carried out on 24th March 2023 in order to:

- assess the general historic character of the area incorporating the Proposed Development, the surrounding study area and the topographic setting;
- assess the condition of known archaeological and historic building assets and their setting;
- identify areas of potential within the proposed development that may contain previously unidentified archaeological remains; and
- identify the location, extent and severity of modern ground disturbance and previous construction impacts within the proposed development.

Potential Impacts

Construction

9.4.6 An assessment of the impacts relating to the construction of the Proposed Development upon designated and non-designated heritage assets is included within this chapter. Potential impacts arising from the construction of the Proposed Development include:

- presence and movement of construction plant and equipment which has the potential to impact upon the setting of heritage assets;
- siting of construction activities within working areas, including associated construction noise and lighting, which have the potential to impact on the setting of heritage assets;
- the use of traffic management and increased volumes of traffic on the local road network, which may impact on the setting of heritage assets;
- potential to encounter, disturb or truncate to the depth of construction, previously unrecorded buried archaeological and palaeoenvironmental remains; and
- compaction of archaeological deposits due to plant movement etc.

Operation

- 9.4.7 An assessment of the impacts relating to the operation of the completed and operational Proposed Development upon heritage assets is included within this chapter. Potential impacts arising from the operation of the Proposed Development include:
- Impacts on heritage assets associated with the introduction of the physical form and appearance of the Proposed Development in their setting;
 - Changes in the noise environment, due to the additional noise produced by the headhouse, which could affect the significance of heritage assets caused by changes to their setting; and
 - The operational lighting introduced as part of the Proposed Development, which may affect the setting of heritage assets.

9.5 Methodology for Determining Baseline Conditions and Sensitive Receptors

Study Area

- 9.5.1 The study area for the assessment is defined as a 1km buffer surrounding the Proposed Development and has been used to identify designated and non-designated assets, their settings and geographical extents, and to inform the context for and potential survival of archaeological remains within the Proposed Development boundary and its immediate surrounding area.
- 9.5.2 The baseline was developed through collation of existing data sources, consultation with statutory bodies and fieldwork surveys in line with the standard and guidance for historic environment desk-based assessment (Ref 9-12).
- 9.5.3 All heritage assets identified within the study area are listed in relevant gazetteers within the DBA contained in ES Volume VI Appendix 9-1.

Methodology for Determining Construction Effects

- 9.5.4 The impact assessment considers the design of the Proposed Development and identifies the level and degree of impact that would arise as a result of the construction phase. The heritage value (significance) of an asset is then combined with the predicted magnitude of change arising from the Proposed Development, in order to determine the significance of effect. This takes into account any mitigation that has been embedded into the design (defined in Section 9.6), in order to minimise impacts to known heritage assets. Additional mitigation, such as archaeological investigation and reporting, may be proposed to compensate for any significant adverse effects.
- 9.5.5 Effects from the construction phase of the Proposed Development can either be temporary or permanent.
- 9.5.6 Temporary construction impacts lasting for all or part of the construction phase of the Proposed Development potentially include the following:
- The presence and movement of construction plant and equipment, which may impact on the significance of heritage assets caused by changes to their setting;
 - The siting of construction compounds and activities within working areas, including associated construction noise and lighting, which may impact on the significance of heritage assets caused by changes to their setting; and
 - The use of traffic management and increased volumes of traffic travelling on the local road network, which may impact on the significance of heritage assets caused by changes to their setting.
- 9.5.7 Permanent construction impacts lasting beyond the construction phase of the Proposed Development potentially include the following:

- Physical impacts on known heritage assets arising from construction activities such as earthworks excavation, the formation of construction compounds and the installation of drainage infrastructure;
- Physical impacts on landscapes of historical, cultural or archaeological significance as a consequence of construction, such as the loss of important elements of the landscape as a result of site clearance;
- The disturbance, compaction or removal of previously unrecorded sub-surface archaeological and palaeoenvironmental deposits through construction activities; and
- Impacts caused by the presence of the construction activity within the settings of heritage assets.

Methodology for Determining Operational Effects

9.5.8 It is not anticipated that there will be any impacts to archaeological or palaeoenvironmental remains arising from operation of the completed development.

9.5.9 An assessment of the impacts relating to the operation of the Proposed Development upon the setting of heritage assets is included within this chapter. Potential impacts arising from the operation of the Proposed Development include:

- Impacts on archaeological remains, historic buildings and the historic landscape associated with the introduction of the physical form and appearance of the Proposed Development in their setting;
- Changes to the noise environment, due to noise produced from the headhouse operation, which may affect the setting of heritage assets; and
- Changes in lighting which may affect the setting of heritage assets.

Significance criteria

Effect and Significance Terminology Overview

Determining Heritage Value

- 9.5.10 The heritage value of an asset (its heritage significance) is guided by its designated status but is derived also from its heritage interest, which may be archaeological, architectural, artistic or historic (NPPF Annex 2, Glossary). Each identified heritage asset can be assigned a heritage value in accordance with the criteria set out in Table 9-4. Using professional judgement and the results of consultation, heritage assets are also assessed on an individual basis and regional variations and individual qualities are taken into account where applicable.
- 9.5.11 The criteria presented in Table 9-5 have been developed using available guidance, experience on comparable schemes and professional judgement.

Table 9-4: Heritage Value Criteria

Heritage Value	Asset Categories
High	• World Heritage Sites • Scheduled Monuments • Registered battlefields • Grade I and II* Listed Buildings • Grade I and II* Registered historic Parks and Gardens • Non-designated archaeological assets that can be shown to have demonstrable national or international importance • Well preserved historic landscape character areas, exhibiting considerable coherence, time-depth or other critical factor(s)
Medium	• Grade II Listed Buildings • Grade II Registered historic Parks and Gardens • Non-designated archaeological assets that can be shown to have demonstrable regional importance • Averagely preserved historic landscape character areas, exhibiting reasonable coherence, time-depth or other critical factor(s) • Historic townscapes with historic integrity in that the assets that constitute their make-up are clearly legible
Low	• Locally Listed Buildings • Non-designated archaeological that can be shown to have demonstrable local importance • Assets whose values are compromised by poor preservation or survival of contextual associations to justify inclusion into a higher grade • Historic landscape character areas whose value is limited by poor preservation and/ or poor survival of contextual associations
Very Low	• Assets identified on national or regional databases, but which have no archaeological, architectural, artistic or historic value • Assets whose values are too compromised by poor preservation or survival of contextual associations to justify inclusion into a higher grade • Landscape with no or little significant historical merit

Determining Magnitude of Change

- 9.5.12 Having identified the value of the heritage asset, the next stage in the assessment is to identify the level and degree of change (impact) to an asset arising from the development. Impacts may arise during construction or operation and can be temporary or permanent. Impacts can occur to the physical fabric of the asset or affect its setting.
- 9.5.13 The level and degree of change (magnitude of change) is assigned with reference to a four-point scale as set out in Table 9-5. In respect of archaeology, an assessment of the level and degree of impact is made in consideration of any scheme design mitigation (embedded and committed mitigation) as set out in Table 9-6. If no impact on heritage value is identified, no impact rating is given and no resulting effect reported.

Table 9-5: Magnitude of Change Criteria

Change Rating	Description of Change
High	Changes such that the heritage value of the asset is totally altered or destroyed through physical impact or comprehensive alteration to its setting affecting its value, seriously impeding the ability to understand and appreciate the asset.
Medium	Change such that the heritage value of the asset is affected due to alterations to its physical form or noticeable change to its setting through alterations resulting in erosion in the ability to understand and appreciate the asset.
Low	Changes such that the heritage value of the asset is slightly affected due to changes to its physical form or to changes to its setting that slightly affect the ability to understand or appreciate the asset.
Very Low	Changes to the asset or its setting that hardly affect heritage value resulting in no real change in our ability to understand and appreciate the heritage value of the asset.

Table 9-6: Impact Rating Criteria (Archaeology)

Impact Rating	Description of Impact
High	Changes such that the heritage value of the asset is totally altered or destroyed through physical impact or comprehensive alteration to its setting affecting its value, seriously impeding the ability to understand and appreciate the asset.
Medium	Change such that the heritage value of the asset is affected due to alterations to its physical form or noticeable change to its setting through alterations resulting in erosion in the ability to understand and appreciate the asset.
Low	Changes such that the heritage value of the asset is slightly affected due to changes to its physical form or to changes to its setting that slightly affect the ability to understand or appreciate the asset.
Very Low	Changes to the asset or its setting that hardly affect heritage value resulting in no real change in our ability to understand and appreciate the heritage value of the asset.

9.5.15 The classification of an effect, having taken into consideration any embedded mitigation, is determined by cross-referencing between the value of the asset (Table 9-4) and the magnitude of change (Table 9-5). The resultant significance of the effect can be adverse or beneficial as determined using Table 9-7.

Table 9-7: Assessment of Effect

		Magnitude of Change			
		High	Medium	Low	Very Low
Sensitivity (value) of asset	High	Major	Major	Moderate	Minor
	Medium	Major	Moderate	Minor	Minor
	Low	Moderate	Minor	Minor	Negligible
	Very Low	Minor	Minor	Negligible	Negligible

9.5.16 Residual major or moderate effects are deemed to be 'significant' for the purposes of the EIA Regulations, in accordance with standard EIA practice. Minor and negligible effects are deemed to be 'not significant' and may not be important or relevant to the decision-making process, although they may be matters of local concern.

Limitations and Assumptions

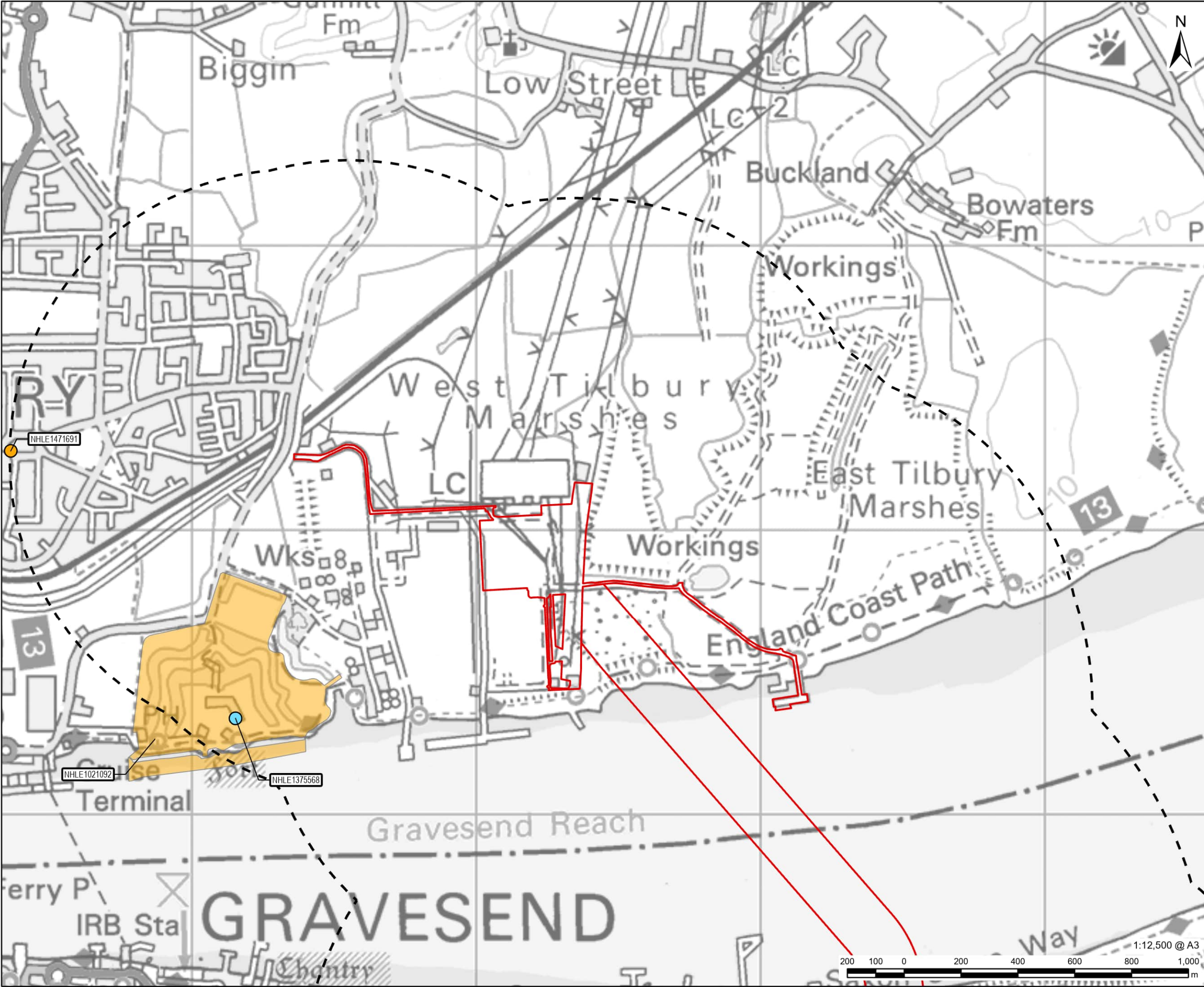
- 9.5.17 The assessment is based in part on data received from the Essex Historic Environment Records (EHER) on 8th March and 3rd November 2023. The assessment has been undertaken with reference to the baseline data, information and records pertaining to the historic environment derived from desk-based sources.
- 9.5.18 The baseline data and records obtained are considered to be representative of the conditions that would exist at the point of commencing construction of the Proposed Development and the year of its operation. The nature of the historic environment is such, that no material changes to its form, character and appearance are predicted to occur during this time.
- 9.5.19 Due to the sensitivities of the foreshore area being intrinsically linked to the European designations further along the foreshore to the east, intrusive archaeological and geo-archaeological surveys have been unable to be undertaken and will not resume until April 2024.
- 9.5.20 The Written Scheme of Investigation (ES Volume VI Appendix 9.3) and desk-based assessment (ES Volume VI Appendix 9.1) have been reviewed and approved by the Archaeological Officer at Essex County Council and Historic England Regional Science Advisor and their comments taken into account when finalising the documents.

9.6 Historic Environment Baseline

- 9.6.1 A baseline summary is provided below. A full and detailed description of the baseline conditions within the Site and surrounding Study Area is provided in the DBA (ES Volume VI Appendix 9-1: Historic Environment Desk-Based Assessment). The baseline considered:
- The topography and geology of the Site (Section 4.1 of ES Volume VI Appendix 9-1: Historic Environment);
 - The designated and non-designated archaeological assets within the Site and Study Area (Section 4.2 and 4.3 of ES Volume VI Appendix 9-1: Historic Environment Desk-Based Assessment);
 - The historic development of the Site and Study Area and the historic landscape character of the wider area (Section 4.2 and 4.3 of ES Volume VI Appendix 9-1: Historic Environment Desk-Based Assessment);
 - The significance of the known designated and non-designated heritage assets within the Site and Study Area (Section 5.1 of ES Volume VI Appendix 9-1: Historic Environment Desk-Based Assessment);
 - The potential for the survival of previously unknown archaeological remains within the Site and their heritage significance (value) (Section 5.1 of ES Volume VI Appendix 9-1: Historic Environment Desk-Based Assessment); and
 - The character of the historic landscape and its sensitivity to change within the Site (Section 7.1 of ES Volume VI Appendix 9-1: Historic Environment Desk-Based Assessment).
- 9.6.2 The DBA (ES Volume VI Appendix 9-1: Historic Environment Desk-Based Assessment) presents a detailed assessment of the archaeological and heritage baseline, a full overview of the designated and non-designated heritage assets located within the Study Area, and an assessment of the baseline in which the significance and contribution of setting to significance of the assets are described. This discussion has enabled assets which are not considered likely to experience any significant impacts or effects as result of the Proposed Development to be identified and scoped out of the assessment within this chapter.
- 9.6.3 The baseline presented in this chapter informs the context and potential survival of both known and previously unrecorded archaeological remains within each of the headhouse and SEC sites and their immediate surroundings. This baseline enables an assessment of whether heritage assets may be directly or indirectly impacted by the Proposed Development.
- 9.6.4 Designated heritage assets are pre-fixed with (NHLE) for National Heritage List for England, and their location is shown on Figure 9-1. Non-designated assets are referenced using the Essex HER unique identifier number. These are pre-fixed with (MEX) and are shown on Figure 9-2.

Designated Heritage Assets

- 9.6.5 There are no World Heritage Sites, registered parks and gardens, registered battlefields or conservation areas located within the 1km study area.
- 9.6.6 A single scheduled monument asset, the Tilbury Fort scheduled monument (**NHLE 1021092**) is located within the study area, located approximately 400m south-west of the Proposed Development. The main defensive structure of the star fort itself is located approximately 750msouthwest of the Proposed Development.
- 9.6.7 The associated grade II* listed Officers' Barracks (**NHLE 1375568**) lies within the fort approximately 840m south-west of the Proposed Development.
- 9.6.8 A second listed building, the grade II Tilbury Clock Tower War Memorial (**NHLE 1471691**) is located on the western edge of the 1km study area in Civic Square Tilbury. Constructed in 1934 the memorial is a tall white painted, square tower with Ionic corner pilasters above which round clock faces are set on each side. The memorial is located on the western side of Civic Square in front of the Tilbury Hub municipal buildings.



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LEGEND
Red Line Boundary
1km Study Area
Scheduled Monument
Listed Building
Grade II
Grade II*

NOTES
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FIGURE TITLE
Tilbury Designated Heritage Assets

FIGURE NUMBER
Figure 9.1

- 9.6.9 The significance of designated heritage assets is discussed in Section 6 of the DBA (ES Volume VI Appendix 9-1: Historic Environment Desk-Based Assessment). The location of all designated heritage assets in relation to the Proposed Development is shown on Figure 9-1.

Non-Designated Heritage Assets

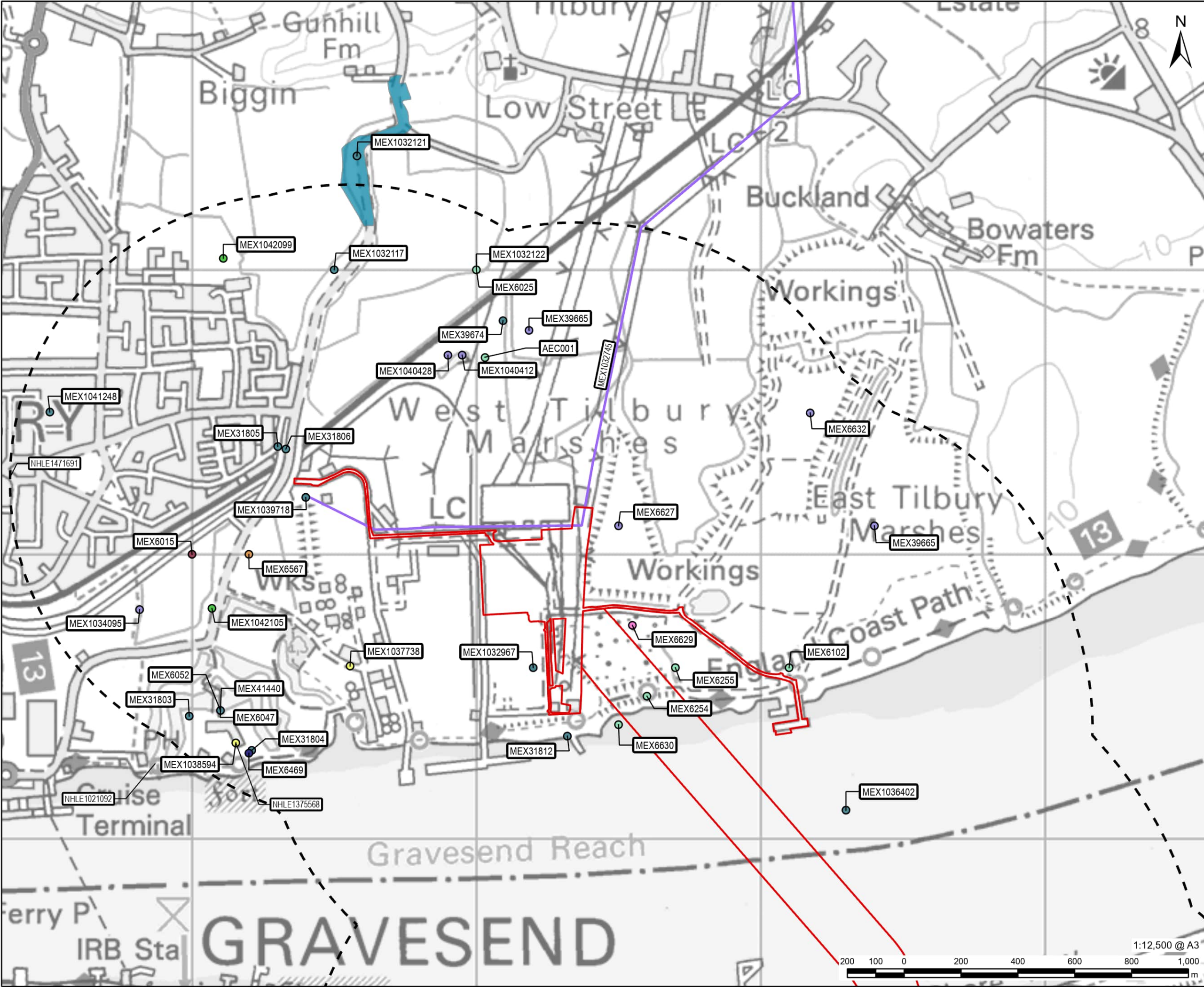
- 9.6.10 A single non-designated heritage asset, Medieval Sea Wall (**MEX6629**) has been identified within the limits of the Proposed Development.
- 9.6.11 A further 24 non-designated heritage assets have been recorded within the 1km of the Proposed Development.
- 9.6.12 The significance of non-designated heritage assets is discussed in Section 6 of the DBA (ES Volume VI Appendix 9.1: Historic Environment Desk-Based Assessment).
- 9.6.13 The location of all non-designated heritage assets in relation to the Proposed Development is shown on Figure 9-2.

Geology

- 9.6.14 The underlying bedrock geology of the Proposed Development is Lewes Nodular Chalk Formation, comprising Seaford Chalk and Newhaven Chalk, formed approximately 72.1 to 93.9 million years ago during the Cretaceous Period. The Site is located on the Thames floodplain with superficial geology recorded as Alluvium, comprising clay, silt, sand and peat, formed between 11.8 thousand years ago and present during the Quaternary Period. Soils within the Proposed Development area are recorded as being loamy and clayey soils of coastal flats with naturally high groundwater (Ref 9-13).

Deposit Model

- 9.6.15 A geoarchaeological deposit model was undertaken in September 2023 by Quest (ES Volume VI Appendix 9.2), to determine the depth of deposits within the Site and the wider study area, and to assess the potential for Palaeolithic, Mesolithic and later prehistoric alluvial gravels and peat deposits to be located within the Proposed Development.
- 9.6.16 The deposit model identified the underlying bedrock at the Proposed Development is chalk bedrock at a depth of between -17m and -17.5m OD (Ordnance Datum).
- 9.6.17 Shepperton gravels have been observed at a depth of between -13m and -14.5m OD within the Proposed Development, with a thickness of approximately 3-3.5m.
- 9.6.18 Alluvial deposits were recorded within the Proposed Development, with the deposit model highlighting two distinct alluvial deposits; the lower alluvial deposits that have a higher sand component, and an upper alluvium which has more silt and clay deposits within it. Both alluvial layers have organic material and plant remains within them.
- 9.6.19 The lower alluvium has been identified as dating to the early to mid-Holocene Period, when the River Thames was a single channel. Horizons and lenses of organic peat have been identified within the lower alluvium. The horizon of these alluvial deposit recorded at a depth of between 0 and 1m aOD and extending to a maximum depth of -14.5m OD.
- 9.6.20 Three distinct peat deposits have been identified extending within the Proposed Development, these include Lower Peat deposit, which were identified at between -10.10 and -10.60m OD with a thickness of approximately 0.5m. These have been dated to the Mesolithic period.
- 9.6.21 The Middle Peat separates the two alluvial deposits and was observed at a depth of between -6.13 and -3.44m OD, with a variable thickness of between 1.2 and 2.1m. The Middle Peat has been dated to between the Late Mesolithic and Bronze Age period.
- 9.6.22 The Upper Peat seals the Upper Alluvial deposits and was identified at a level of 0.47m aOD with a general thickness of 0.5m. The Upper Peat was dated to the Iron Age.



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LEGEND

Red Line Boundary
1km Study Area

Non-Designated Asset (Point)

- Palaeolithic
- Neolithic
- Prehistoric
- Roman
- Medieval
- Medieval to Post Medieval
- Post Medieval
- Modern
- Unknown

Non-Designated Asset (Line)
Unknown

Non-Designated Asset (Polygon)
Modern

NOTES

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FIGURE TITLE
Tilbury Non-Designated Heritage Assets

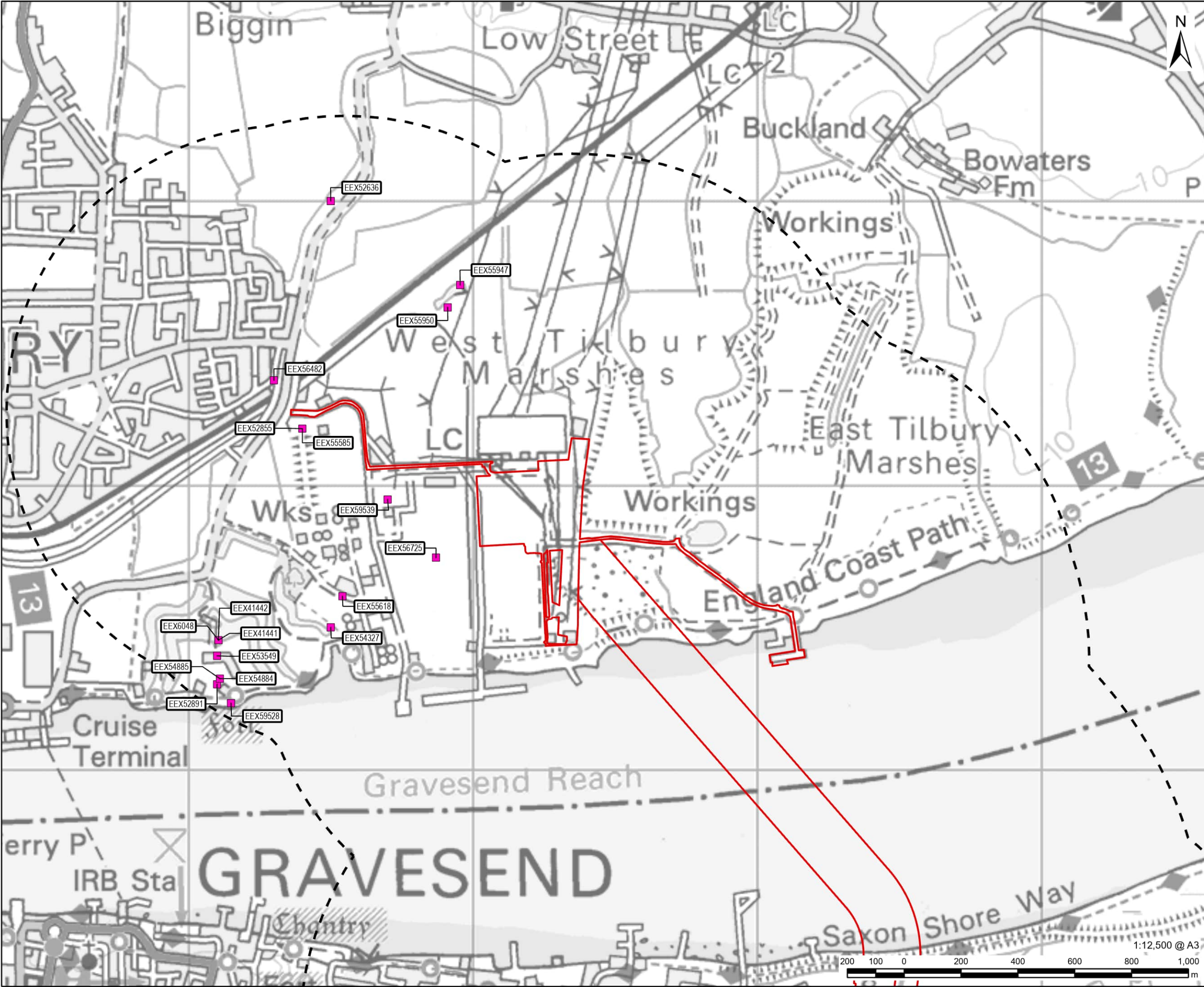
FIGURE NUMBER
Figure 9.2

- 9.6.23 The Quest deposit model concludes that the peat deposits likely represent marsh conditions that may be representative of semi-terrestrial sedge-fen, reed-swamp, saltmarsh and carr woodland type environments.
- 9.6.24 Based upon the survival and presence of the lower peat deposits within the Proposed Development, there is **high** potential for surviving Mesolithic to Iron Age environmental remains within this Site that may contain palaeoenvironmental and macrofaunal data that may help contribute to the ongoing study of sea level rises at Tilbury and the Lower Thames Valley.

Historic Baseline Summary

Prehistoric (Up to 43 AD)

- 9.6.25 The Anglian glacial icesheets extend southwards down to the north of London, with this glaciation responsible for shifting the route of the River Thames further southward and the scouring of the pre-Anglian land-surface. Very little Palaeolithic *in-situ* remains survive north of London, with most archaeological remains representing isolated findspots that have been re-deposited.
- 9.6.26 The Site is located within the Tilbury Marshes, located on the northern bank of the River Thames in Essex, with layers and deposits of alluvial silts and clays deposited through marine transgressions and regressions. Two findspots of possible Palaeolithic worked flint are recorded within the study area, one within Tilbury Fort (**MEX6469**) and the second (**MEX6015**) 600m west of the Site.
- 9.6.27 During the Mesolithic period, the sea-levels were much lower, allowing lower lying areas of land to be exploited and used for travel. Doggerland, which linked the south-east of England to Europe, was a key link for Mesolithic travellers to exploit and traverse the wider landscape. A partial male skeleton that dated to the Mesolithic period, was recovered in 1883, during the construction of the East and West India Docks, approximately 2.4km west of the Site. Mesolithic peat deposits have been identified through geoarchaeological deposit modelling undertaken by Quest in 2023 (ES Volume VI Appendix 9.2) within the Site at a depth of approximately-10m OD. Further peat deposits dated to the Mesolithic period have also been more widely identified at Tilbury Fort, approximately 800m south-west of the Site. Based upon the presence of peat deposits dating to the Mesolithic period, there is a **high** potential to encounter Mesolithic environmental remains within the Proposed Development.
- 9.6.28 Evidence of Neolithic settlement has survived due to the waterlogged nature of the area, with evidence of settlement activity at Blackwater Estuary, in the north-east of the county. Very little Neolithic evidence has been recorded within the study area, however, with only a single Neolithic flint axe (**MEX6567**) recorded approximately 260m south-west of the Site. Whilst there is evidence of Neolithic activity within the study area, no identified evidence of Bronze Age activity or settlement has been recorded.
- 9.6.29 By the Iron Age, the sea levels had decreased, which in combination with wetland drainage enabled salt-making to be undertaken within the marshes. Evidence of this salt-making industry is located approximately 820m north of the Site (**MEX6632**), with a potential 'saltern' identified here.
- 9.6.30 Whilst there is evidence of Neolithic activity within the wider area at Blackwater Estuary, only a single Neolithic find has been recorded within the study area, with no evidence of Neolithic activity located close to the Site. Previous archaeological investigations (Figure 9-3) within the study area have highlighted an absence of any Bronze Age settlement or activity. In addition, while evidence of Iron Age salt making has been previously recorded approximately 800m north of the Proposed Development there is very little evidence of further Iron Age activity in close proximity to the Proposed Development. It is, therefore, deemed that there is a **low** potential for prehistoric remains to be located within the Proposed Development.



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ISSUE PURPOSE
Environmental Statement

PROJECT NUMBER
60677311

FIGURE TITLE
Tilbury Archaeological Events

FIGURE NUMBER
Figure 9.3

Roman (43 AD to 410)

- 9.6.31 Following the invasion and subsequent conquest of Britain in 43 AD, many of the tribes in the south-east were either quickly defeated by the Romans or aligned themselves with Rome. The small settlement at Colchester was the capital of the *Catuvellauni* tribe, who were defeated following the arrival of the Romans, with Colchester becoming the first Roman capital of England.
- 9.6.32 There is evidence of Roman activity within the study area, with a Roman settlement that comprised circular occupational structures, some with wooden floors, a trackway and pottery dating to the 1st and 2nd century (**MEX6102**) approximately 350m east of the Site. Several Roman burials (**MEX6025**) and fragments of a lamp (**MEX1321220**) that may have been a part of a funerary offering were recorded in 1910 approximately 910m north of the Site.
- 9.6.33 Recent archaeological investigations undertaken in advance of the proposed Thurrock Flexible Generation Plant (not yet recorded on the Kent HER (**AEC001**)), approximately 500m north of the Proposed Development, have identified evidence of Roman salt production. The archaeological investigation recorded at least six 'red hills', low mounds of burnt salt making debris and briquetage fired clay/pottery, enclosed by large ditches/water channels and clay pits that have been interpreted as ovens, and a large amount of Samian pottery, glass, a whetstone and a rotary quern.
- 9.6.34 Based upon the close proximity of the Roman salt production site and further evidence of Roman activity within the wider study area, there is a **moderate** potential for previously unrecorded Roman remains to be located within the Proposed Development.

Early Medieval and Medieval (410-1540)

- 9.6.35 Following the withdrawal of the Roman Empire from Britain in 410, Germanic tribes from northern Europe started to settle across southern England, with Roman influence regressing from the 5th century onwards.
- 9.6.36 Whilst there is no evidence of early medieval activity within the study area, excavations at Gun Hill, approximately 1.7km north of the Proposed Development did identify a sunken floor building, pottery and salt making tools.
- 9.6.37 Due to the lack of identified early medieval activity within the study area, it is deemed that there is a **low** potential for early medieval archaeological remains to be located within the Proposed Development.

Medieval (1066-1540)

- 9.6.38 The Domesday Census identifies Tilbury as '*Tilberia/Tilibiam*' in 1066 and would have included a survey of both East and West Tilbury. Across Tilbury, the land was primarily open fields during the medieval period, reflecting the agrarian nature of the area surrounding Tilbury.
- 9.6.39 Within the study area, there is evidence of land management, with a sea wall that dates to the medieval period (**MEX6629**) located just to the east of the Site that extends westward into the Proposed Development. The Andre and Chapman map of 1777 identifies an embankment feature, likely part of a sea wall, present on the eastern edge of the Proposed Development. This appears to follow the alignment of the waterway located to the east of the southern leg of the Proposed Development. The sea wall is located approximately 300m north of the River Thames.
- 9.6.40 A trackway (**MEX60477**) that was the main route from West Tilbury to a ferry crossing to the southern bank of the River Thames was previously identified approximately 780m south-west of the Site, on land that Tilbury Fort now occupies.
- 9.6.41 Due to the potential for remains associated with the sea wall to extend within the Proposed Development, it is deemed that there is a **moderate** potential for previously unrecorded medieval archaeological remains to be located within the Proposed Development.

Post-Medieval (1640-1900)

- 9.6.42 Following the Reformation in the 16th century, a campaign of land reclamation was started, with the embankments along the River Thames, including the Tilbury Marshes, drained and built up to allow further. The land reclamation within the Tilbury Marshes allowed the construction of coastal defences such as Tilbury Fort (**NHLE 1375568**) to bolster the Thames tidal defences. The fort originated in 1540 as a two storey D-shaped blockhouse fort, one of a series that Henry VIII constructed to defend the Thames approach to London. It was one of a pair, with its sister fort constructed on the opposite side of the Thames in Gravesend. A third blockhouse fort was constructed further to the east at Coalhouse. Tilbury fort was later rebuilt in 1672 in its current pentagonal form and a double moat to a design by Sir Bernard de Gomme. A barracks building was built within the fort in the 18th century to house the officers stationed at the fort and is separated listed at grade II* (**NHLE 1375568**).
- 9.6.43 The 1778 plan drawing of Tilbury Fort shows the Proposed Development to be located between two field boundaries; this has altered by 1805, and by 1863 the fields have been altered considerably into much larger apportionments highlighting the agricultural usage and fertile ground of the area.
- 9.6.44 Archaeological investigations by Oxford Archaeology approximately 440m south of the Proposed Development identified the remains of a probable post-medieval farm (**EEX55618**), reinforcing the agricultural nature of the local area of Tilbury.
- 9.6.45 Towards the latter half of the 19th century, the town of Tilbury experienced a period of rapid expansion. The Tilbury Riverside Station railway line was constructed, allowing rapid travel between Tilbury and London. Coinciding with the introduction of the railways was the development and opening of the Tilbury Docks, approximately 2.3km west of the Site; both of these developments helped to expand and develop Tilbury.
- 9.6.46 In the late 19th century, Tilbury Fort was redeveloped, with its armaments updated with the addition of two 6-inch breach loading guns converted from naval use, as well as four 12-pounder quick firing guns (**MEX6052**).
- 9.6.47 Whilst there is evidence for post-medieval defensive activity within the study area such as the construction of Tilbury Fort, there is very little evidence for further post-medieval activity of occupation in close proximity to the Proposed Development. Therefore, the potential to encounter previously unrecorded post-medieval archaeological remains within the Proposed Development is deemed to be **low**.

Modern (1900-Present)

- 9.6.48 Following the expansion of Tilbury in the later 19th century the modern period saw developments to the defence and industrial aspects of the surrounding area.
- 9.6.49 In the early 1930's Tilbury town centre was redeveloped with new municipal buildings, library and war memorial (**NHLE 1471691**) constructed as a focal point for the town.
- 9.6.50 Evidence of World War II defences are still visible within the landscape and include two spigot mortar emplacements placed within Tilbury Fort (**MEX31803** and **MEX31804**), located approximately 850m south-west of the Site.
- 9.6.51 A road barrier (**MEX31805**) and turret (**MEX31806**) were recorded approximately 80m north of the Site at the Fort Road railway crossing. Further defences were recorded north of the Site, including several anti-glider ditches (**MEX39674**), and a D-Day assembly area (**MEX1041248**) located approximately 730m and 200m west of the Site respectively.
- 9.6.52 A pillbox (**MEX31812**), designed in the 'Essex Lozenge style', is still extant and located approximately 65m south of the Site.
- 9.6.53 In the latter half of the 20th century, the wider area around Tilbury become more industrialised, with the construction of the Tilbury A Power Station, built in 1958, and Tilbury B Power Station built in 1968. Tilbury A power station was demolished in 1999, whilst Tilbury B power station was demolished in 2019. The remains of Tilbury Power Station have been identified adjacent to the Proposed Development.

- 9.6.54 Due to Tilbury Power Station occupying much of the land to the west of the Proposed Development, there is very little potential to encounter further remains relating to the power station or any modern asset dating to World War II. Therefore, the potential to encounter archaeological remains dating to the modern period is deemed to be **low**.

Historic Landscape Character (HLC)

- 9.6.55 Thurrock lies within the Northern Thames estuary, an area that has been described in Natural England's National Character Area Profile: 81. Greater Thames Estuary, as a largely urban landscape bordered by marshland along the Thames foreshore. Along the foreshore and chalk outcrops there are extensive areas of mineral extraction, with the main settlements in the area South Ockendon, Grays and Tilbury.
- 9.6.56 Essex HLC data has identified two individual historic landscape areas within the study area. The Proposed Development is situated within an area identified as coastal wetland; historic defensive elements are still part of this landscape and include the Tilbury Fort scheduled monument (**NHLE 1021092**). No further defensive historic assets have been identified within this landscape area.
- 9.6.57 The second landscape area identified within the study area is an area of industrial buildings that date to the latter half of the 20th century; the Proposed Development and previous construction of Tilbury Power Station are part of this industrial landscape. Whilst the Proposed Development is part of this 20th century industrial landscape, no new heritage assets have been identified through examination of the HLC.

Key Heritage Assets

- 9.6.58 Based upon the review of the baseline conditions, the following assets have been identified in Table 9-8 as being potentially affected by the Proposed Development. This takes into account the location of the assets and their relationship to the Proposed Development. These receptors have been assigned a heritage value using the methodology outlined in Table 9-4 above.

Table 9-8: Heritage Receptors

Receptor	Sensitivity (Heritage Value)
Tilbury Fort (NHLE 1021092)	High
Tilbury Fort Officers Barracks (NHLE 1375568)	High
Tilbury Clock Tower War Memorial (NHLE 1471691)	Medium
Pillbox (MEX31812)	Low
Medieval sea wall (MEX6629)	Low
Tilbury Power Station (MEX1032967)	Low
Previously Unrecorded Mesolithic and Palaeoenvironmental Remains	Medium

9.7 Key Parameters for Assessment

- 9.7.0 A detailed description of the Proposed Development is provided in ES Volume II Chapter 3 Project Description. The following aspects of the Proposed Development relevant to this chapter comprise:
- The site preparation and construction works, especially:
 - Excavation of the cable tunnel drive shaft;
 - Removal of top-soil and groundworks required for the creation of the proposed Sealing End Compound and headhouse and associated new terminal end pylon and maintenance track;

- Removal of top-soil and groundworks required for the creation of areas for plant maintenance, site offices and compound areas and storage areas for construction and for excavated materials and the tunnel shaft caisson segments;
 - Acoustic disturbance from construction activities;
 - Dust generation; and
 - Lighting during preparation and construction.
- Land uses within the operational Proposed Development in particular:
 - New Sealing End Compound and headhouse;
 - Construction and demolition of terminal pylon;
 - New access roads and utilities;
 - New drainage; and
 - Lighting.

9.8 Mitigation

Embedded Mitigation

9.8.1 Embedded mitigation will be utilised at the Proposed Development and will include:

- Construction and implementation of a biodiverse headhouse roof which will be used to limit the visual intrusion of the headhouse structure; and
- Implementation and use of landscaping to the east of the Proposed Development which will provide some limited screening of the headhouse.

Additional Mitigation

9.8.2 The Outline Construction Environmental Management Plan (CEMP) (ES Volume VI Appendix 3.1) sets out the additional mitigation measures identified. This section summarises the types of mitigation measures that will be considered to mitigate against the effects on heritage assets where required. These measures will be adopted during the construction phase:

- Written Scheme of Investigation for Geoarchaeological Deposit Modelling and Borehole Survey (ES Volume VI, Appendix 9.3)
- Written Scheme of Investigation for a Trial Trench Evaluation and/or archaeological investigation and recording during construction.

9.8.3 The mitigation would comprise archaeological investigations during the enabling works and construction works phase to determine the presence/absence and extent of any surviving archaeological remains within the Site, particularly those of prehistoric, Romano-British or medieval date. Appropriate mitigation measures within the Site may take the form of archaeological trial trenching, archaeological monitoring, and/or excavation.

9.8.4 A WSI (Written Scheme of Investigation) has been previously approved in relation to a Geoarchaeological Deposit Modelling and Borehole Survey by the Historic Environment and Archaeological Officers at Essex and Kent County Councils.

9.8.5 The results of the archaeological/geoarchaeological investigation could then inform the requirement for and design of an appropriate programme of archaeological and palaeoenvironment investigation, sampling and recording to mitigate any adverse effects shaft construction on deeply buried peat horizons and alluvial deposits.

9.8.6 Any future mitigation work will be covered under a separate WSI for a Trial Trench Evaluation. The scope and specification of the mitigation would be agreed in consultation with the Historic

Environment and Archaeological Officers for Essex and Kent County Council as advisers to Thurrock Council and Gravesham Borough Councils.

9.8.7 The following additional mitigation measures are presented within the Outline CEMP:

- Ongoing discussion and engagement with the Historic Environment Officer (or equivalent) relating to the archaeological mitigation strategy;
- An appropriate programme of archaeological and palaeoenvironment investigation, sampling and recording to mitigate any adverse effects of shaft construction on deeply buried peat horizons and alluvial deposits is to be developed based on the results of the archaeological/geoarchaeological investigation;
- A WSI for an Earthwork Survey and a Trial Trench Evaluation is to be developed, the scope and specification of the mitigation would be agreed in consultation with the Historic Environment and Archaeological Officers for Essex and Kent County Council as advisers to Thurrock Council and Gravesham Borough Councils;
- In the event of human remains being found during the course of archaeological monitoring of construction works, works should stop, the local coroner, Project Manager and Historic Environment Officer (or equivalent) should be notified immediately. The local area around the remains should be immediately isolated and protected by the Archaeological Contractor. Work in this area should not recommence without the prior acceptance of the Project Manager and a Ministry of Justice (exhumation) licence being in place prior to their removal;
- If archaeological finds are discovered during archaeological monitoring of construction works, the Applicant's Project Manager will be informed, and appropriate steps undertaken, in consultation with the Historic Environment Officer (or equivalent), to excavate and record the finds prior to construction works continuing; and
- Ensure all written records of the archaeological investigations undertaken are completed and submitted in a timely manner. A copy of any analysis, reporting or publication required as part of the Mitigation Strategy should be deposited with the relevant local authority repositories as part of the Proposed Development archives within 1 year of completion of the Proposed Development or such other period as may be agreed in writing by the relevant planning authority. Archive should be deposited with an appropriate museum.
- In the event that artefacts which are recovered, fall within the scope of the Treasure Act 1996 and Treasure (Designation) Amendment Order 2023, these will be reported to the Project Manager immediately. The Project Manager will contact His Majesty's Coroner, the relevant Portable Antiquities Scheme Finds Liaison Officer and the Historic Environment Officer. The Project Manager will ensure that the Treasure regulations are enforced and that all the relevant parties are kept informed. A list of finds that have been collected that fall under the Treasure Act and related legislation will be included in the fieldwork report. Artefacts that are classified as 'treasure' will be removed to a safe place, but where removal cannot be completed on the same working day as the discovery, suitable security measures must be taken to protect the finds from damage or unauthorised removal.

9.9 Potential Impacts

Potential Impacts During Construction Phase

- 9.9.1 The current preliminary designs for the Proposed Development indicate that the construction of the cable tunnel will extend for approximately 2.2km from headhouse to headhouse on a north-west to south-east alignment, with a width of 4m (internal), 4.5m (external) and a depth of approximately 35m below ground level (bgl). The cable tunnel will be excavated primarily through the chalk bedrock which was formed between 125-65 million years BC and is archaeologically sterile, with no potential to encounter archaeological remains within these chalk bedrock deposits.
- 9.9.2 The SEC will occupy an area of 7339m², with two new overhead line gantry structures maximum height of 12m aOD. The Gravesend Tunnel Headhouse and SEC will be surrounded by a 2.4m mesh or palisade security fence topped with an electric pulse fence to a height of 3.4 m; these may be intrusive.
- 9.9.3 A cable tunnel drive shaft will be excavated and installed at the Proposed Development at Tilbury as a permanent access point to the cable tunnel. The Tilbury headhouse structure which sits on top of the drive shaft measures 23.5m x 20.5m with a height of approximately 10m aOD and will have a piled foundation down to a depth of approximately 8-15m, with pile caps on top at a depth of approximately 1m.
- 9.9.4 Existing pylons 4VG043, 4VG044 and 4VG045A will be removed. Pylon 4VG045A would be replaced with the new terminal Pylon 4VG045A, which would be erected adjacent to its existing location and concrete foundations/pile caps for each foot of the pylon will extend to a depth of approximately 4m bgl.
- 9.9.5 The erection of the new terminal pylon will require the use of a mobile hydraulic crane. The mobile hydraulic crane will require a stable base and assembly area, measuring approximately 50m x 50m. It is likely that this area will be required to be stripped and laid down with a suitable material.
- 9.9.6 Ground reduction and topsoil strip may be required as part of the installation of the reception shaft compound, which will encompass an area of approximately 400m².
- 9.9.7 The main works compound would comprise an area of approximately 6000m²; part of this installation would require the removal of vegetation within this area, however, this area of land has been highly truncated and disturbed during activities relating to the running of Tilbury Power Station.
- 9.9.8 Existing utilities within the Proposed Development will be temporarily diverted via open cut trenching of 3-4m of the existing verge.
- 9.9.9 Works relating to the decommissioning and removal of the existing pylons 4VG043, 4VG044 and 4VG045A, and any associated overhead works such as stringing of the new Overhead Line (OHL) cables will have no impact to the archaeological remains within the Proposed Development.

Designated Heritage Assets

Tilbury Fort (NHLE 1021092)

- 9.9.10 Tilbury Fort is a late 17th century military coastal fort that has been constructed on the original site of a 16th century blockhouse fortification; it is located approximately 400m west of the Proposed Development.
- 9.9.11 Tilbury Fort is a nationally significant example of a 17th century military coastal fort. It was designed by noted military architect Sir Bernard de Gomme with the design incorporating architectural and defensive designs from the Dutch lowland regions. The original 16th century Tudor blockhouse was incorporated into the 17th century fort design and parts of this are still visible within the fort. The grade II* listed building, Tilbury Officers Barracks (**NHLE 1375568**), is located within the scheduled monument with Tilbury Fort and holds a group value with this asset.
- 9.9.12 The fort is therefore architecturally unusual with very few examples of British fortifications with Dutch inspired architecture and design in England surviving, with Tilbury Fort the best-preserved example

of Dutch inspired coastal fort design in England. Its historical and architectural value is considered to be **high**.

- 9.9.13 The fort contains surviving buried 16th century remains associated with the 16th century blockhouse; these alongside the still extant blockhouse are considered to be excellent examples of a structure used exclusively for artillery warfare, with only 27 other examples known within England. Therefore, the archaeological value of the asset is considered to be **high**.
- 9.9.14 The fort is located along the northern bank of the River Thames, with its setting defined as the wider Thames estuary and foreshore on which it overlooks from a higher defensive position and incorporates views across the river.
- 9.9.15 Existing pylons 4VG043, 4VG044 and 4VG045A are visible to the east of Tilbury Fort, however, existing industrial infrastructure partially screens the asset from the lower-lying structures that include the SEC compound and Tilbury Headhouse. There is some limited inter-visibility with the Gravesend Proposed Development, with the existing pylons visible from the asset to the south across the River Thames. It is expected that the construction of the Proposed Development will temporarily introduce noise and visual intrusion associated with construction activities and increased traffic into the setting of the asset.
- 9.9.16 The proposed tunnel bore machine generator emissions stacks would be required for a 25-week period during construction. As a worst-case, two or three stacks with a maximum height of 50m above ground level would be required. Whether located adjacent to the cable tunnel drive shaft or at an alternative location in the northwest corner of the Site the emissions stacks would be visible from Tilbury Fort. However, when viewed against the pylons and lighting columns that form the existing skyline to the east and northeast of the monument this temporary visual intrusion into the setting of the monument would be limited and would not affect the ability to appreciate or understand the significance of the asset.
- 9.9.17 These changes will introduce temporary noise into the foreshore setting of the asset which will temporarily alter the character of the surroundings in which the asset is experienced. These changes will not result in any real change in the ability to appreciate the heritage value of the asset which is derived from architectural, historic and archaeological interest.
- 9.9.18 These changes are assessed as having a temporary **very low** magnitude of change resulting in a **minor adverse** effect of temporary duration. This temporary effect is **not considered to be significant**.

Tilbury Fort Officers Barracks (NHLE 1375568)

- 9.9.19 Tilbury Fort Officers Barracks is a grade II* listed barrack building located within the Tilbury Fort scheduled monument (**NHLE 1021092**). The asset is located approximately 840m west of the Proposed Development. The asset was commissioned and built in 1772, and initially comprised a terraced structure of 22, two storey-high officer houses. The houses were originally constructed from late 17th century yellow stock brick, with a steep slate-hipped roof, however, there has been some late 19th century alterations, including the conversion and amalgamation of the 22 houses into seven, and a small museum.
- 9.9.20 The asset is a well-preserved and surviving example of Ordnance Board housing at this time, with its significance derived from its architectural and historical value. The asset is located within the Tilbury Fort (**NHLE 1021092**), of which it shares a group value and connection to. The asset is considered to have a high value based on its architectural and historical value and its group association with the scheduled monument Tilbury Fort.
- 9.9.21 The setting of the asset is considered to be Tilbury Fort, and any associated structures associated with Tilbury Fort such as the defensive walls, palisades and defensive earthworks. The Proposed Development is not considered to be part of the setting of the asset.
- 9.9.22 The Proposed Development is not considered to be part of the setting of the asset and as such there will be **very low** impact resulting from the construction of the Proposed Development on the setting of the asset. Any construction activities will not interfere with the relationship between the barracks and the Tilbury Fort and will not result in any real change in the ability to appreciate the heritage

value of the asset which is derived from architectural and historic interest. This is assessed as having a **minor** magnitude of change, resulting in a **minor** effect of temporary duration during the construction phase. This temporary effect is **not considered to be significant**.

Tilbury Clock Tower War Memorial (NHLE 1471691)

- 9.9.23 The grade II listed Tilbury Clock Tower War Memorial (**NHLE 1471691**) is located approximately 1km to the west of the Proposed Development and approximately 2km from the proposed Sealing End Compound and headhouse. The memorial is located within Civic Square, Tilbury and is surrounded by municipal and residential buildings and faces the wide tree lined Calcutta Road to the west, which provide the designed urban setting of the asset. The Site does not form part of the asset's setting and does not contribute to its significance. In addition, neither construction or operation of the Proposed Development would result in potential impacts to the physical fabric or setting of the asset, consequently **no impact** to the Tilbury Clock Tower War Memorial has been concluded.

Non-Designated Assets

Medieval Sea Wall (MEX6629)

- 9.9.24 A medieval sea wall has been identified on the Andre and Chapman plan of 1777 extending within the extent of the Proposed Development to the south of the cable tunnel drive shaft and headhouse, on a broadly east to west alignment. No extant remains or earthworks are visible on the surface with any remains likely to survive below ground as archaeological remains. Any surviving archaeological remains of the sea wall would likely consist of an earthen bank, and any associated features such as posts or stakes used as part of the defences. The asset would hold archaeological interest and would hold the potential to provide information regarding medieval seas defences across England. The asset is considered to have a **low** value.
- 9.9.25 There is potential for the construction of the Proposed Development including the construction of the temporary access roads, and the construction of the temporary working area to partially or truncate or remove the asset which would result in a medium impact to the asset.
- 9.9.26 Given the **medium** magnitude of change upon the asset of **low** value, this would result in a **slight adverse** effect. This permanent effect is **not considered to be significant**.

Pillbox (MEX31812)

- 9.9.27 An extant pillbox dating to World War II is located approximately 100m south of the Site. The asset is an 'anti-shell' design that was unique to Essex and is a well-preserved example of World War II defences of Essex with its significance derived from its architectural and historical value.
- 9.9.28 The setting of the pillbox is considered to be the River Thames foreshore, and any nearby defensive structures, including Tilbury Fort to the west.
- 9.9.29 The asset is considered to have **low** value based upon its architectural and historical value as a well-preserved example of a World War II pillbox.
- 9.9.30 The construction of the Proposed Development will temporarily introduce noise and potential visual intrusion associated with construction phase activities into the setting of the pillbox. However, these changes will not result in any real change in the ability to appreciate the heritage value of the asset which is derived from architectural and historic interest and its strategic position defending the Thames foreshore to the south of the Proposed Development. This is assessed as having a **low** magnitude of change, resulting in a **slight adverse** effect of temporary duration during the construction phase. This temporary effect is **not considered to be significant**.

Impacts on Unknown Buried Archaeology

Previously Unrecorded Mesolithic to Iron Age Remains

- 9.9.31 Deposit modelling undertaken ahead of the Proposed Development by Quest in 2023 (ES Volume VI Appendix 9.2), has identified three well-preserved peat layers that extend within the boundary of the Proposed Development. The lower peat deposits have been identified at an approximate depth of -10m OD and have been highlighted by Quest as dating to the Mesolithic period. The middle peat deposits, dating to between the Late Mesolithic and Early Bronze Age are located at a depth of between -6.13 and -3.44m OD. The upper peat deposits date to the Iron Age and are located at a depth of approximately 0.47m aOD. These lower and middle peat deposits have the potential to contain palaeoenvironmental and faunal data, and to seal Holocene alluvial deposits, whilst the upper peat deposits contain the potential to provide macrofaunal and environmental data from the Iron Age. There is also potential for the peat horizons to contain archaeological remains in the form of lithic artefacts and possibly waterlogged wooden or organic remains relating human occupation of the marshes during the Mesolithic to Iron Age.
- 9.9.32 Any peat deposits and associated archaeological remains identified within the Proposed Development would hold archaeological value in their ability to contribute to local and regional research frameworks, particularly palaeoenvironmental and environmental data to inform further deposit modelling, the understand relative sea level change, landscape development, settlement and resource exploitation within the Lower Thames Valley. Any surviving archaeological or palaeoenvironment remains are therefore considered to have be of medium value.
- 9.9.33 There is potential for the construction of the cable tunnel drive shaft Tilbury SEC and headhouse, and associated piling, and the foundations for the new terminal pylon, to truncate or partially remove any surviving archaeological or palaeoenvironmental remains. These impacts would be localised to the footprint of cable tunnel drive shaft and the headhouse and pylon foundations within the extensive sequence of deposits across the Thames marshes, resulting in a low magnitude of change to the archaeological and palaeoenvironmental resource.
- 9.9.34 Given the **low** impact upon the asset of **medium** value, this would result in a **minor adverse** effect. This permanent effect is **not considered to be significant**.

Potential Effects During Operational Phase

Tilbury Fort (NHLE 1021092)

- 9.9.35 There is some limited inter-visibility with the Proposed Development, with existing pylons 4VG043, 4VG044 and 4VG045A visible from the asset, the Tilbury SEC will not be visible from the asset and are obscured by the existing industrial landscape to the east of the asset. The existing pylon 4VG045A will be demolished and replaced with a pylon of similar dimensions and therefore will be a negligible change to the setting of the asset in this regard. The permanent presence of the new pylon and Proposed Development is considered to have no visual impact upon the setting of Tilbury Fort.
- 9.9.36 The operation of the Proposed Development is not anticipated to increase traffic movement above existing levels and is not considered to affect the ability to interpret the heritage value of the asset. The level of noise generated from the Proposed Development is expected to increase by six decibels, however, the predicted distance of this noise impact will not extend to the asset and will therefore not be perceptible within the scheduled monument (ES Volume III Chapter 11 Noise and Vibration). These changes will not result in any real change in the ability to appreciate the heritage value of the asset which is derived from architectural, historic and archaeological interest and are considered to give a **very low** impact to the asset.
- 9.9.37 Given the **very low** impact upon the asset of **high** value, this would result in a **minor adverse** effect. This permanent effect is considered **not be significant**.

Tilbury Fort Officers Barracks (NHLE 1375568)

- 9.9.38 The Officers Barracks are located within Tilbury Fort which defines its setting, the Proposed Development is not considered to form part of that setting. Whilst there may be some limited inter-visibility from the top of the asset looking eastward with the existing pylons 4VG043, 4VG044 and 4VG045A, these do not form part of the setting of the asset. There will also be no perceptible noise impact upon the asset from the operation of the Proposed Development. Therefore, the operation of the Proposed Development is not considered to affect the ability to experience the asset or alter its heritage value, which is derived from its architectural and historical interest and group association with Tilbury Fort. Therefore, the impact to the asset is considered to be **very low**.
- 9.9.39 Given the **very low** impact upon an asset of **high** value, this would result in a **negligible** effect. This permanent effect is considered **not to be significant**.

Pillbox (MEX31812)

- 9.9.40 There is limited inter-visibility with the Proposed Development with a tall concrete wall obscuring the pillbox from the Proposed Development and some limited inter-visibility with the pylons within the Gravesend Proposed Development. The existing pylons 4VG043, 4VG044 and 4VG045A are visible from the asset. The operation of the Proposed Development is not anticipated to increase traffic movement above existing levels and is not considered to affect the ability to interpret the architectural or heritage value of the asset, or its function as a defensive structure. The level of noise generated from the Proposed Development is expected to be below Lowest Observable Adverse Effect Level (LOAEL) and therefore no impacts to the asset are anticipated. These minor changes to the setting of the asset will not result in any real change in the ability to appreciate the heritage value of the asset which is derived from architectural, historic and archaeological interest and are considered to give a low impact to the asset.
- 9.9.41 Given the **low** impact upon an asset of **low** value, this would result in a permanent **minor adverse** effect. This permanent effect is **not considered to be significant**.

9.10 Residual Effects

9.10.1 This assessment of effects has been undertaken after the implementation of embedded and additional mitigation. Please see Table 9-9 below.

Table 9-9: Assessment of Residual Effects

Receptor	Value/Sensitivity	Potential magnitude of change	Embedded Mitigation	Additional Mitigation	Assessment of Effect	Significance
Construction Phase						
Tilbury Fort (NHLE 1021092)	High	Very Low	None	None Proposed	Minor Adverse	Not Significant
Tilbury Fort Officers Barracks (NHLE 1375568)	High	Negligible	None	None Proposed	Minor Adverse	Not Significant
Pillbox (MEX31812)	Low	Low	None	None Proposed	Minor Adverse	Not Significant
Medieval Sea Wall (MEX6629)	Low	Medium	None	A programme of geoarchaeological borehole survey followed by appropriate archaeological investigation and recording, to be defined in WSI approved by the Local Planning Authority and the CEMP.	Minor Adverse	Not Significant
Previously Unrecorded Mesolithic to Iron Age Remains	Medium	Low	None	A programme of geoarchaeological borehole survey followed by appropriate archaeological investigation and recording, to be defined in WSI approved by the Local Planning Authority and the CEMP.	Minor Adverse	Not Significant
Operational Phase						
Tilbury Fort (NHLE 1021092)	High	Very Low	Biodiverse headhouse roof and screening using landscaping within the Proposed Development	None Proposed	Minor Adverse	Not Significant

Receptor	Value/Sensitivity	Potential magnitude of change	Embedded Mitigation	Additional Mitigation	Assessment of Effect	Significance
Tilbury Fort Officers Barracks (NHLE 1375568)	High	Very Low	Biodiverse headhouse roof and screening using landscaping within the Proposed Development	None Proposed	Minor Adverse	Not Significant
Pillbox (MEX31812)	Low	Low	Biodiverse headhouse roof and screening using landscaping within the Proposed Development	None Proposed	Minor Adverse	Not Significant

9.11 Summary

- 9.11.1 The historic environment desk-based assessment prepared to inform this report has identified two designated heritage assets and two non-designated heritage assets within the combined study area of the Proposed Development. The desk-based assessment also identified potential for the survival of previously unknown palaeoenvironmental and prehistoric remains dating to the Mesolithic to Iron Age within the Proposed Development.
- 9.11.2 Construction of the Proposed Development has the potential to result in a temporary effects on the setting of the Tilbury Fort Scheduled Monument (**NHLE 1021092**) and the Tilbury Fort Officers Barracks (**NHLE 1375568**), however, these effects are not considered to be significant. The Tilbury Clock Tower War Memorial (**NHLE 1471691**) will not experience any effects as a consequence of the Proposed Development.
- 9.11.3 There is potential for adverse effects on the surviving non-designated extant pillbox (**MEX31812**) or any non-designated archaeological remains associated with the Medieval Sea Wall (**MEX6629**) in addition to previously unknown buried archaeological and palaeoenvironmental remains within the Proposed Development. It is concluded that the potential adverse effects arising from the loss or disturbance of these remains arising from construction of the Proposed Development could be mitigated by an appropriate programme of archaeological investigation, sampling and recording developed in consultation with the Historic Environment Officers at Essex County Council.
- 9.11.4 It is therefore not anticipated that the Proposed Development would give rise to any residual significant effects on the historic environment.

9.12 References

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Ref 9-4 Department for Levelling Up, Housing and Communities and MHCLG (2019). Planning Practice Guidance (PPG), Historic Environment. Available at: <https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment>. [Accessed 24 August 2023].

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Ref 9-11 Institute of Environmental Management and Assessment (IEMA) (2021). Principles of Cultural Heritage Impact Assessment in the UK. Available at: https://www.archaeologists.net/sites/default/files/j30361_iema_principlesofchia_v8.pdf. [Accessed 24 August 2023].

Ref 9-12 Chartered Institute of Archaeologists (CIfA) (2020). Standard and guidance for historic environment desk-based assessment. Available at: https://www.archaeologists.net/sites/default/files/CIfAS%26GDBA_4.pdf. [Accessed 24 August 2023].

Ref 9-13 CIfA (2022). Regulations for professional conduct. Available at: <https://www.archaeologists.net/sites/default/files/Code%20of%20conduct%20revOct2022.pdf>. [Accessed 24 August 2023].

Ref 9-14 British Geological Survey (2023). British Geology Viewer. Available at:
<https://geologyviewer.bgs.ac.uk/>. [Accessed 24 August 2023].

9.13 Abbreviations

Abbreviation	Meaning
bgl	Below ground level
BGS	British Geological Survey
CEMP	Construction Environmental Management Plan
CIfA	Chartered Institute for Archaeologists
EHHER	Essex Historic Environment Data
ES	Environmental Statement
HLC	Historic Landscape Character
IEMA	Institute of Environmental Management and Assessment
NHLE	National Heritage List for England
NPPF	National Planning Policy Framework
OD	Ordnance Datum
OHL	Overhead line
PPG	Planning Practice Guidance
SEC	Sealing End Compound
TKRE	Tilbury to Grain and Tilbury to Kingsnorth
WSI	Written Scheme of Investigation

