



NORTH FALLS

Offshore Wind Farm

PRELIMINARY ENVIRONMENTAL INFORMATION REPORT

Chapter 25 Onshore Archaeology and Cultural Heritage

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Contents

25	Onshore Archaeology and Cultural Heritage	11
25.1	Introduction.....	11
25.2	Consultation	12
25.3	Scope	29
25.3.1	Study area	29
25.3.2	Realistic worst-case scenario	29
25.3.3	Summary of mitigation embedded in the design.....	35
25.4	Assessment methodology	35
25.4.1	Legislation, guidance and policy.....	35
25.4.2	Data sources	41
25.4.3	Impact assessment methodology	43
25.4.4	Historic Landscape Character	49
25.4.5	Cumulative Effects Assessment methodology	50
25.4.6	Transboundary effects assessment methodology	50
25.4.7	Assumptions and limitations	50
25.5	Existing environment	51
25.5.1	Introduction.....	51
25.5.2	Designated heritage assets	51
25.5.3	Non-designated heritage assets	52
25.5.4	Potential sub-surface archaeological remains	61
25.5.5	Archaeological Potential within the onshore project area	75
25.5.6	Above ground Archaeological Remains and Heritage Assets.....	76
25.5.7	Heritage Importance	76
25.5.8	Heritage Setting Considerations	77
25.5.9	Historic Landscape Characterisation	78

25.5.10	Tendring District Historic Environment Characterisation.....	79
25.5.11	Geoarchaeological and Palaeoenvironmental Potential	80
25.5.12	Future trends in baseline conditions	81
25.6	Ongoing and forthcoming programmes of assessment and survey.....	82
25.6.1	Below Ground Archaeology	82
25.6.2	Geoarchaeological and Palaeoenvironmental Remains	82
25.6.3	The Setting of Heritage Assets	83
25.7	Assessment of significance	84
25.7.1	Potential effects during construction	84
25.7.2	Potential effects during operation	95
25.7.3	Potential effects during Decommissioning	97
25.8	Potential monitoring requirements	98
25.9	Cumulative effects	98
25.9.1	Identification of potential cumulative effects	98
25.9.2	Other plans, projects and activities	99
25.9.3	Assessment of cumulative effects.....	105
25.10	Transboundary effects.....	109
25.11	Interactions.....	109
25.12	Inter-relationships	110
25.13	Summary	114
25.14	References	119

Tables

Table 25.1	Consultation responses	13
Table 25.2	Realistic worst case scenarios.....	31
Table 25.3	Embedded mitigation measures	35

Table 25.4 NPS assessment requirements	36
Table 25.5 Standards and guidance documents relevant to assessment of the historic environment	41
Table 25.6 Other available data and information sources	42
Table 25.7 Criteria for determining heritage importance.....	47
Table 25.8 Definition of magnitude of impact to heritage assets	48
Table 25.9 Significance of effect matrix.....	49
Table 25.10 Definition of significance of effect	49
Table 25.11 Summary of potential archaeological remains identified to date.....	67
Table 25.12 Possible above ground heritage assets within onshore project area	76
Table 25.13 Potential cumulative effects	98
Table 25.14 Summary of projects considered for the CEA in relation to onshore archaeology and cultural heritage (project screening)	101
Table 25.15 Cumulative effects from other projects on onshore archaeology and cultural heritage during construction.....	106
Table 25.16 Cumulative effect from other projects on onshore archaeology and cultural heritage during operation	107
Table 25.17 Onshore archaeology and cultural heritage interactions.....	109
Table 25.18 Inter-relationships between impacts - screening.....	111
Table 25.19 Inter-relationship between impacts – phase and lifetime assessment	113
Table 25.20 Summary of potential likely significant effects on onshore archaeology and cultural heritage topic	115

Figures (Volume II)

Figure 25.1 Location of designated heritage assets within the study area

Figure 25.2 Location of non-designated heritage assets within the study area

Appendices (Volume III)

Appendix 25.1 Cable Landfall Search Area. Historic Environment Desk-Based (Baseline) Assessment

Appendix 25.2 Onshore Cable Corridor(s) and Onshore Substation Zone. Historic Environment Desk-Based (Baseline) Assessment

Appendix 25.3 Onshore Infrastructure Setting Assessment

Appendix 25.4 Offshore Infrastructure Setting Assessment

Appendix 25.5 Heritage Walkover Survey

Appendix 25.6 Geoarchaeological Desk Based Assessment

Appendix 25.7 Onshore Historic Environment Gazetteers

Appendix 25.8 Archaeological Geophysical Survey Report

Appendix 25.9 Five Estuaries Archaeological and Geoarchaeological Monitoring of Ground Investigation Works Report

Glossary of Acronyms

ADBA	Archaeological Desk-Based Assessment
ADS	Archaeology Data Service
AfL	Agreement for Lease
ALS	Airborne Laser Scanning
APS	Air Photo Services Limited
ALSF	Aggregates Levy Sustainability Fund
BP	Before Present
CAA	Conservation Area Appraisal
CEA	Cumulative Effects Assessment
CHIA	Cultural Heritage Impact Assessment
CIfA	Chartered Institute for Archaeologists
DBA	Desk-Based Assessment
DCMS	Department of Culture, Media and Sport
DCO	Development Consent Order
EIA	Environmental Impact Assessment
EPP	Evidence Plan Process
ES	Environmental Statement
ETG	Expert Topic Group
GDBA	Geoarchaeological Desk-Based Assessment
GIS	Geographic Information System
HECA	Historic Environment Character Area
HECZ	Historic Environment Character Zone
HER	Historic Environment Record
HES	Essex County Council Historic Environment Service (Place Services)
HLC	Historic Landscape Character
IEMA	Institute of Environmental Management & Assessment
IHBC	Institute of Historic Building Conservation
LiDAR	Light Detection and Ranging
LVIA	Landscape and Visual Impact Assessment
MHCLG	Ministry of Housing, Communities and Local Government
MHWS	Mean High Water Springs
NFID	North Falls Identification Number
NFOW	North Falls Offshore Wind Limited
NHLE	National Heritage List of England
NMP	National Mapping Programme
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NRHE	National Record of the Historic Environment
PAS	Portable Antiquities Scheme

PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
PPAs	Palaeolithic Potential Areas
PPG	Planning Practice Guidance
SLVIA	Seascape, Landscape and Visual Impact Assessment
WSI	Written Scheme of Investigation
WTG	Wind turbine generator
ZTV	Zone of Theoretical Visibility

Glossary of Terminology

The Applicant	North Falls Offshore Wind Farm Limited (NFOW).
The Project Or 'North Falls'	North Falls Offshore Wind Farm, including all onshore and offshore infrastructure.
Array areas	The two distinct offshore wind farm areas (including the 'northern array area' and 'southern array area') which together comprise the North Falls offshore wind farm.
Array cables	Cables which link the wind turbine generators with each other and the offshore substation platform(s).
Evidence Plan Process (EPP)	A voluntary consultation process with specialist stakeholders to agree the approach, and information to support, the EIA and HRA for certain topics.
Expert Topic Group (ETG)	A forum for targeted engagement with regulators and interested stakeholders through the EPP.
Geoarchaeology	The application of earth science principles and techniques to the understanding of the archaeological record. Includes the study of soils and sediments and of natural physical processes that affect archaeological sites such as geomorphology, the formation of sites through geological processes and the effects on buried sites and artefacts.
Horizontal directional drill (HDD)	Trenchless technique to bring the offshore cables ashore at the landfall. The technique will also be used for installation of the onshore export cables at sensitive areas of the onshore cable route.
Landfall	The location where the offshore cables come ashore.
Landfall construction compound	Compound at landfall within which HDD or other trenchless technique would take place.
Landfall search area	Locations being considered for the landfall, comprising the Essex coast between Clacton-on-Sea and Frinton-on-Sea.
Link boxes	Underground chambers or above ground cabinets next to the onshore export cables housing low voltage electrical earthing links.
Offshore project area	The overall area of the array areas and the offshore cable corridor.
Onshore archaeological DBA study area	A desk-based assessment study area incorporating the onshore cable corridor(s) and onshore substation zone plus a buffer.
Onshore cable corridor(s)	Onshore corridor(s) within which the onshore export cables and associated infrastructure will be located. A final onshore cable route for which consent will be sought will be selected from within these corridor(s).
Onshore cable route	Onshore route within which the onshore export cables and associated infrastructure would be located.
Onshore project area	The boundary in which all onshore infrastructure required for the Project will be located (i.e. landfall; onshore cable route, accesses, construction compounds; onshore substation and National Grid substation extension), as considered within the PEIR.
Onshore substation	A compound containing electrical equipment required to transform and stabilise electricity generated by the Project so that it can be connected to the National Grid.
Onshore substation zone	Area within which the onshore substation will be located.
Prehistoric Period	Broad term encompassing the Palaeolithic, Mesolithic, Neolithic, Bronze Age and Iron Age.
Setting	The NPPF identifies setting as that which encompasses an asset's surroundings in which it is experienced. The extent of setting is not fixed and can contribute both positively and negatively to the heritage significance of an asset.

Study area	Area where potential impacts from the Project could occur, as defined for each individual EIA topic.
Wind turbine generator (WTG)	Power generating device that is driven by the kinetic energy of the wind.

25 Onshore Archaeology and Cultural Heritage

25.1 Introduction

1. This chapter of the Preliminary Environmental Information Report (PEIR) considers the likely significant effects of the North Falls offshore wind farm (hereafter 'North Falls' or 'the Project') on onshore archaeology and cultural heritage. The chapter provides an overview of the existing environment for the onshore project area and wider study areas, followed by an assessment of likely significant effects for the construction, operation, and decommissioning phases of the Project.
2. This chapter has been written by Royal HaskoningDHV, with the assessment undertaken with specific reference to the relevant legislation and guidance, of which the primary sources are the National Policy Statements (NPS). Details of these and the methodology used for the Environmental Impact Assessment (EIA) and Cumulative Effects Assessment (CEA) are presented in Chapter 6 EIA Methodology (Volume I) and Section 25.4.
3. The assessment should be read in conjunction with the following linked chapters (Volume I):
 - Chapter 16 Offshore Archaeology and Cultural Heritage;
 - Chapter 20 Onshore Air Quality
 - Chapter 21 Water Resources and Flood Risk;
 - Chapter 26 Noise and Vibration;
 - Chapter 27 Traffic and Transport;
 - Chapter 29 Offshore Seascape, Landscape and Visual Impact Assessment; and
 - Chapter 30 Landscape and Visual Impact Assessment.
4. Additional information to support the onshore archaeology and cultural heritage chapter includes the following appendices (Volume III):
 - Appendix 25.1 – Cable Landfall Search Area. Historic Environment Desk-Based (Baseline) Assessment;
 - Appendix 25.2 – Onshore Cable Corridor(s) and Onshore Substation Zone. Historic Environment Desk-Based (Baseline) Assessment;
 - Appendix 25.3 – Onshore Infrastructure Setting Assessment;
 - Appendix 25.4 – Offshore Infrastructure Setting Assessment;
 - Appendix 25.5 – Heritage Walkover Survey;
 - Appendix 25.6 – Geoarchaeological Desk Based Assessment;
 - Appendix 25.7 – Onshore Historic Environment Gazetteers;
 - Appendix 25.8 – Archaeological Geophysical Survey Report; and
 - Appendix 25.9 – Five Estuaries Archaeological and Geoarchaeological Monitoring of Ground Investigation Works Report.

25.2 Consultation

5. Consultation with regard to onshore archaeology and cultural heritage has been undertaken in line with the general process described in Chapter 6 EIA Methodology (Volume I) and Chapter 7 Technical Consultation (Volume I). The key elements to date have included Scoping and the ongoing technical consultation via the Historic Environment Expert Topic Group (ETG) (onshore and offshore) which comprises Essex County Council, Tendring District Council and Historic England. The feedback received has been considered in preparing the PEIR. Table 25.1 provides a summary of how the consultation responses received to date have influenced the approach that has been taken.
6. This chapter will be updated following the consultation on the PEIR in order to produce the final assessment, which will be presented in an Environmental Statement (ES) that will be submitted with the Development Consent Order (DCO) application. Full details of the consultation process will also be presented in the Consultation Report as part of the DCO application.

Table 25.1 Consultation responses

Consultee	Date / Document	Comment	Response / where addressed in the PEIR
The Planning Inspectorate (PINS)	Scoping Opinion, August 2021	On the basis that the Proposed Development will not result in direct physical impacts to onshore designated heritage assets during operation, and that any effects arising from indirect impacts, including permanent change to setting, are scoped into the assessment as a separate matter, the Inspectorate agrees that this matter can be scoped out of the ES.	Noted, direct physical impacts to onshore designated heritage assets during the operation phase are scoped out of the assessment. Effects arising from indirect impacts including permanent change to setting during the operation phase are assessed in Section 25.7.2.
The Planning Inspectorate (PINS)	Scoping Opinion, August 2021	On the basis that the Proposed Development will not result in direct physical impacts to onshore non-designated heritage assets during operation, and that any effects arising from indirect impacts, including permanent change to setting, are scoped into the assessment as a separate matter, the Inspectorate agrees that this matter can be scoped out of this aspect of the ES.	Noted, direct physical impacts to onshore non-designated heritage assets during the operation phase are scoped out of the assessment. Effects arising from indirect impacts including permanent change to setting during the operation phase are assessed in Section 25.7.2.
The Planning Inspectorate (PINS)	Scoping Opinion, August 2021	The Scoping Report identifies the designated heritage assets within the onshore scoping area. Figure 3.12 illustrates the location of these assets, which also identifies assets in a wide area beyond the boundary of the onshore scoping area. The ES should provide evidence to justify the choice of any study area(s) used to define the assessment and discussion held with relevant consultation bodies.	Study areas defined for the purposes of this assessment were agreed with the Historic Environment ETG and are presented in Section 25.3.1.
The Planning Inspectorate (PINS)	Scoping Opinion, August 2021	The Applicant should make effort to agree the need for targeted archaeological evaluation, following completion of the baseline surveys, with the relevant consultation bodies. The rationale supporting the approach for pre-consent and any post-consent evaluation should be described in the ES. The mechanisms for securing any post-consent evaluation should also be described in the ES.	Noted, this will be addressed through consultation with the Historic Environment ETG as the EIA progresses and is described in the ES and supporting Outline Written Scheme of Investigation and any relevant survey specific Written Schemes of Investigation.
The Planning Inspectorate (PINS)	Scoping Opinion, August 2021	The ES should include an assessment of potential effects on geoarchaeological deposits. This should include consideration of the potential effects on the zone between the marine and onshore environments.	A Geoarchaeological Desk Based Assessment is included as Appendix 25.6 (Volume III) of the PEIR and makes recommendations for further evaluation. The scope of further evaluation will be agreed with the relevant members of the Historic Environment ETG. The desk based

Consultee	Date / Document	Comment	Response / where addressed in the PEIR
			assessment will be updated and reissued with the results of any agreed geoarchaeological evaluation.
The Planning Inspectorate (PINS)	Scoping Opinion, August 2021	The Inspectorate considers that the onshore elements of the Proposed Development have the potential to affect elements of historic landscape character, such as historic hedgerows and protected lanes. Given the stage of the design, the ES should therefore address whether significant effects are likely to occur to these features and therefore ensure cross over between other aspect chapters that could provide relevant information, such as the onshore ecology and landscape and visual aspect chapters.	The ES will include assessment of effects on elements of Historic Landscape Character including historic hedgerows and protected lanes.
The Planning Inspectorate (PINS)	Scoping Opinion, August 2021	In respect of indirect physical impacts, the Inspectorate considers that there is potential for effects to below ground heritage assets arising from changes to groundwater levels and/ or movement of water through deposits, which should be assessed in the ES where significant effects are likely to occur.	The ES will include assessment of any potential effects arising from changes to groundwater levels.
The Planning Inspectorate (PINS)	Scoping Opinion, August 2021	In addition to the documents listed at paragraph 592, the Inspectorate considers that Principals of Cultural Heritage Assessment in the UK. (Institute of Environmental Management and Assessment, Institute of Historic Buildings Conservation, Chartered Institute for Archaeologists 2021) should inform the approach to assessment, including in relation to understanding the significance of cultural heritage assets within the study area and evaluating the impact of the Proposed Development upon them.	The PEIR and ES will be compliant with the relevant guidance documents (see Section 25.4.1 and Section 25.4.3).
The Planning Inspectorate (PINS)	Scoping Opinion, August 2021	<p>The Applicant should review the potential for palaeoenvironmental remains to survive within the study area once the surveys listed at paragraph 594 are complete; where there is potential for such remains, a palaeoenvironmental assessment should also be undertaken to inform the understanding of baseline conditions.</p> <p>The Inspectorate also notes that the onshore scoping area has potential for Pleistocene and Holocene deposits of archaeological significance; a Palaeolithic desk-based assessment should be prepared to inform baseline conditions, as this information may not be fully represented in the Historic Environment Record.</p>	<p>The Geoarchaeological Desk Based Assessment included as Appendix 25.6 (Volume III) provides initial consideration and understanding of baseline palaeoenvironmental conditions as well as the potential for Pleistocene and Holocene deposits of archaeological significance.</p> <p>The scope of further evaluation will be agreed with the relevant members of the Historic Environment ETG. The desk based assessment will be updated and reissued with the results of any agreed geoarchaeological evaluation. The results will be presented within the ES.</p>

Consultee	Date / Document	Comment	Response / where addressed in the PEIR
Essex County Council	Scoping Opinion, August 2021	The archaeological response for the seaward area will be the responsibility of Historic England. With regard the onshore archaeology and cultural heritage section 3.7 we have a number of specific points.	Noted and addressed below.
Essex County Council	Scoping Opinion, August 2021	Paragraph. 568 needs to include a separate Geoarchaeological Desk Based Assessment to assess the Palaeolithic/Pleistocene potential of the area due to the importance of these deposits within the study area. This should provide details of the scope for assessment of any significant geoarchaeological remains prior to any construction.	The Geoarchaeological Desk Based Assessment included as Appendix 25.6 (Volume III) provides initial consideration and understanding of baseline palaeoenvironmental conditions as well as the potential for Pleistocene and Holocene deposits of archaeological significance. The scope of further evaluation will be agreed with the relevant members of the Historic Environment ETG. The desk based assessment will be updated and reissued with the results of any agreed geoarchaeological evaluation. The results will be presented within the ES.
Essex County Council	Scoping Opinion, August 2021	Paragraph 568 should also include an Aerial Photographic Assessment and rectification which also includes an assessment and plotting of any available LiDAR data and provides a GIS dataset of all cropmark features within the study area. This would allow more accurate location of any targeted trenches.	An Aerial Photographic Assessment is included within Appendix 25.1 (Volume III). This assessment, alongside Geophysical Survey results (Appendix 25.8, Volume III), has been used to develop the targeted trial trenching plan in consultation with the relevant members of the Historic Environment ETG.
Essex County Council	Scoping Opinion, August 2021	Though the addition of the above there would be greater confidence for the identification of areas of high potential for archaeological remains.	Noted and addressed above.
Essex County Council	Scoping Opinion, August 2021	Paragraph 569. Once the final route has been determined the length of this would require archaeological investigation prior to the submission of the application, in the first instance this could be through geophysical techniques. This should be followed by a targeted trial trench evaluation which includes features identified through the Aerial Photographic Assessment as well as those features identified in the geophysics survey. An assessment of the possible 'blank' areas will also be required. Any other areas where construction would require groundworks or the construction of compounds should also be targeted.	The EIA strategy for onshore archaeology and cultural heritage has been agreed with the relevant members of the Historic Environment ETG. The approach to geophysical survey and trial trenching is being agreed through Written Schemes of Investigation in consultation with the relevant members of the Historic Environment ETG.

Consultee	Date / Document	Comment	Response / where addressed in the PEIR
Essex County Council	Scoping Opinion, August 2021	For information: Any ground investigation works carried out for engineering purposes would be of use and relevance to the geoarchaeological assessment and it is highly recommended that this be combined with the geoarchaeological assessment if possible. The results of any geotechnical boreholes should be made available to the specialist employed to carry out the assessment.	A Geoarchaeological Desk Based Assessment is included as Appendix 25.6 (Volume III) of the PEIR and makes recommendations for further evaluation. The scope of further evaluation will be agreed with the relevant members of the Historic Environment ETG. The desk based assessment will be updated and reissued with the results of any agreed geoarchaeological evaluation.
Essex County Council	Scoping Opinion, August 2021	The scoping report provided (Environmental Impact Assessment Scoping Report rev-04 16/07/2021) describes the North Falls NSIP development as being at an indicative stage only due to the magnitude and complexity of the project. As such, comments are limited to general terms.	Noted.
Essex County Council	Scoping Opinion, August 2021	The area of scoping in its northern extent appears to be particularly large however it is understood that this accommodates the parameters for the corridor for onshore trenched cabling as set out in Table 1.1. From this table it appears that no pylons are proposed and the indicative maximum height of onshore substation equipment 18m.	Noted, since scoping the onshore project area and its design have undergone refinement. The Project Description is included in Chapter 5 (Volume I) of the PEIR. The study areas for PEIR Chapter 25 Onshore Archaeology and Cultural Heritage (Volume I) are set out in Section 25.3.1 of this chapter.
Essex County Council	Scoping Opinion, August 2021	The proposed methodologies for assessment of built heritage assets including proposed walkover surveys to identify any potential non-designated heritage assets are acceptable. However, the proposed location and timings of these walkover surveys remain unspecified. The documents and acts referenced in informing the standards and methodologies are acceptable.	Noted. These assessments have been undertaken in consultation and agreement with the relevant members of the Historic Environment ETG. The results of the Onshore Infrastructure Setting Assessment are included in Appendix 25.3 (Volume III) of the PEIR, and the Heritage Walkover Survey results are presented in Appendix 25.5 (Volume III) of the PEIR.
Essex County Council	Scoping Opinion, August 2021	There is potential for military coastal defences to be identified at the indicative area of cable onshoring between Clacton-on-Sea and Frinton-on-Sea that has been scoped in. There is also potential for the project to impact upon the fringes and built heritage assets of Clacton-on-Sea, Frinton-on-Sea, and Holland-on-Sea. The scoping out of these towns in their entirety is a cause for concern, and would benefit from clear justification.	The Heritage Walkover Survey (Appendix 25.5, Volume III) confirmed the presence of four FW3/22 pillboxes and the absence of any remains associated with Martello Towers H and I and two other pillboxes within the landfall area. The scope of the Onshore Infrastructure Setting Assessment (Appendix 25.3, Volume III) and

Consultee	Date / Document	Comment	Response / where addressed in the PEIR
			has been agreed in consultation with the relevant members of the Historic Environment ETG.
Essex County Council	Scoping Opinion, August 2021	3.11 It is recommended that an integrated approach is taken to assessing impacts of the scheme. It is important that this approach is applied to the inter- relationships of built heritage, landscape and visual assessment, and noise and vibration as identified in table 3.32 when assessing the impacts of the scheme on these topics and their relationship with onshore built heritage.	Noted and addressed in Section 25.7.1 of this chapter.
Essex County Council	Scoping Opinion, August 2021	Table 3.21 How will operational and maintenance requirements of the project impact the built heritages assets identified both directly and indirectly through impacts to their setting.	Addressed in Section 25.7 of this chapter.
Essex County Council	Scoping Opinion, August 2021	3.73 The potential impacts of water management, of present watercourses and potential floodwaters upon identified heritage assets through temporary works, maintenance works, and decommissioning works should be considered. These works have the potential to result in physical impacts upon heritage assets through ground water level changes, run off and drainage.	Addressed in Section 25.7 of this chapter.
Historic England	Scoping Opinion, August 2021	To assist any further planning of the proposed NFOW project we offer the following link to the Historic England Advice Note 15 Commercial Renewable Energy Development and the Historic Environment (2021): https://historicengland.org.uk/images-books/publications/commercial-renewable-energy-development-historic-environment-advice-note-15/	Noted and included in Table 25.5 of this chapter.
Historic England	Scoping Opinion, August 2021	We note Section 3.7 relating to onshore archaeology and cultural heritage that has been submitted in the Scoping Report. We agree that the scoping report has taken into consideration both designated and non-designated heritage assets and that the assessment methodologies are generally appropriate – and we offer the following specific comments below.	Noted.
Historic England	Scoping Opinion, August 2021	We acknowledge that the Planning Inspectorate (2018) Advice Note 9 (Paragraph 4.5), states that “At the time of the Scoping Request, it may be necessary to leave certain matters open” (para. 42). We are concerned,	Noted, since scoping the onshore project area and its design have undergone refinement. The Project Description is included in Chapter 5 of

Consultee	Date / Document	Comment	Response / where addressed in the PEIR
		however, by the very large size of the onshore scoping area (Figure 1.4), which makes it impossible to offer any specific comments. It limits the response, in terms of onshore works, to only very general comments at this stage.	the PEIR (Volume I). The study areas for PEIR Chapter 25 Onshore Archaeology and Cultural Heritage (Volume I) are set out in Section 25.3.1 of this document.
Historic England	Scoping Opinion, August 2021	In our opinion, the submission is premature and the onshore scoping area is simply too large at this stage, covering more than half the Tendring peninsula. No cable corridor has been defined and no substation location has been identified in the Scoping Report. The onshore scoping area contains five Scheduled Monuments, 230 Listed Buildings (including four at Grade I and 13 at Grade II*), and one Registered Park and Garden (para. 563). Para. 566 acknowledges the region as a whole has high potential for archaeological remains of local, regional and national importance. We note the data for non-designated heritage assets from the Historic Environment Record has not been acquired at this stage (para. 565).	Noted, as above.
Historic England	Scoping Opinion, August 2021	We would expect the scoping area to be narrowed down at an early stage in the project, prior to submission of the Scoping Report. Consequently, we would recommend that the scoping exercise for onshore work is repeated once the grid access has been determined.	Noted, as above.
Historic England	Scoping Opinion, August 2021	We are aware that the location of the proposed substation will not be confirmed by National Grid until January 2022. We are also aware of the key milestones of this project and submission of the PEIR in summer 2022 (para. 55). Consequently, we are concerned to ensure there is adequate time to undertake, in particular, a programme of onshore archaeological assessment that we believe is necessary to support the DCO application (see below).	Noted.
Historic England	Scoping Opinion, August 2021	We note the sources of information to inform the baseline for the study area (Table 3.19). No results have been presented at this stage, with the exception of Figure 3.12 (designated heritage assets). We note that no preliminary assessment of the value of cultural heritage assets within the study area has been undertaken, presumably because of the very large size of the scoping area. At this stage, no systematic archaeological investigation has been undertaken.	Noted, this has since been addressed through consultation with the relevant members of the Historic Environment ETG and the results presented in this chapter and its appendices.
Historic England	Scoping Opinion, August 2021	In terms of below-ground heritage assets (Section 3.7), we welcome the investigations that are proposed to assess cultural heritage. We look forward to reviewing the reports, which should be submitted in the ES. The	Noted.

Consultee	Date / Document	Comment	Response / where addressed in the PEIR
		ES should provide a detailed archaeological baseline; only a detailed and comprehensive understanding of the below-ground archaeological resource will allow for impact to heritage to be properly mitigated. There is significant potential for further nationally important sites to be discovered within the scoping area – and along the onshore cable route, in the area of the proposed substation and in the areas of construction compounds and laydown areas. We would, therefore, recommend that the resolution of the baseline information is considered carefully. For example, a resolution of 1m is the basic minimum needed for archaeological assessments, but where greater detail is required, higher resolution is preferable (Historic England, Using Airborne LIDAR in Archaeological Surveys, 2018): https://historicengland.org.uk/images-books/publications/using-airborne-lidar-in-archaeological-survey/ .	
Historic England	Scoping Opinion, August 2021	For the ES desk-based assessment, this should also include the dataset from CITiZAN (https://citizan.org.uk/). In terms of aerial photographs, all potential archaeological features recorded by aerial photography in the scoping area should be accurately plotted and assessed (para. 593).	Noted, the CITiZAN data has been incorporated into both Chapter 25 Onshore Archaeology and Cultural Heritage and Chapter 16 Offshore Archaeology and Cultural Heritage (Volume I).
Historic England	Scoping Opinion, August 2021	We welcome the proposed programme of archaeological evaluation, comprising geophysical survey followed by archaeological trial-trenching. We are pleased to see that further geophysical survey approaches will be considered in addition to magnetometry following the findings of the DBA (Table 3.20). We note, however, the proposal for only targeted geophysical survey and trial-trenched evaluation identified through desk-based baseline collation (Table 3.2).	The EIA strategy for onshore archaeology and cultural heritage has been agreed with the relevant members of the Historic Environment ETG. The approach to geophysical survey and trial trenching is being agreed through Written Schemes of Investigation in consultation with the relevant members of the Historic Environment ETG.
Historic England	Scoping Opinion, August 2021	In our opinion, the geophysical survey should be undertaken across the DCO application area to ensure the nature, extent and survival of subsurface archaeological and geoarchaeological remains are established and presented in the ES. This will enable an appropriate scheme of mitigation to be prepared. We note that all supporting technical heritage information (full survey reports) is included as appendices to allow the information to be critically assessed (paras. 593-4).	The geophysical survey is ongoing with results from the surveys undertaken between December 2021 and December 2022 presented in Appendix 25.8 (Volume III).
Historic England	Scoping Opinion, August 2021	We also recommend trial-trenched evaluation should be carried out in the area of the proposed substation and in the areas of construction compounds, as well as in pinch-point locations along the proposed onshore cable route and to test the results of any significant	The Project is in the process of drafting a trial trench plan for the onshore substation zone and other pinch-points along the onshore cable corridor(s).

Consultee	Date / Document	Comment	Response / where addressed in the PEIR
		concentrations of archaeological remains (defined by the other archaeological surveys) (para. 560). We acknowledge a more comprehensive (onshore project wide) approach to trial trenching is anticipated to take place in the post-consent stages (para. 560).	
Historic England	Scoping Opinion, August 2021	We would also recommend specialist palaeoenvironmental assessment is undertaken where the desk-based assessment, and other surveys, indicate there is potential for the survival of palaeoenvironmental remains. This will enable the nature, extent and survival of subsurface archaeological and geoarchaeological remains to be adequately established, and presented in the ES. This will ensure that a detailed and informed archaeological mitigation strategy can be prepared and agreed. We would recommend that geoarchaeological considerations and requirements are built into any geotechnical investigations that are carried out to ensure that opportunities are maximised where possible. This should include providing the geoarchaeologist with direct access to the core material rather than just to the logs or to extruded samples.	The Geoarchaeological Desk Based Assessment included as Appendix 25.6 (Volume III) provides initial consideration and understanding of baseline palaeoenvironmental conditions as well as the potential for Pleistocene and Holocene deposits of archaeological significance. The scope of further evaluation will be agreed with the relevant members of the Historic Environment ETG. The desk based assessment will be updated and reissued with the results of any agreed geoarchaeological evaluation. The results will be presented within the ES.
Historic England	Scoping Opinion, August 2021	The onshore scoping area also has potential for encountering potential for Pleistocene and Holocene deposits of archaeological significance. Consequently, we recommend that a Palaeolithic desk-based assessment is also prepared. The nature and scope of specialist Palaeolithic survey and assessment should be devised through consultation with the archaeological advisors at Essex Place Services. This information may not be adequately represented in the Essex Historic Environment Record, by shallow geophysics or even by shallow evaluation trenches.	Noted, as above.
Historic England	Scoping Opinion, August 2021	An effective method for identifying the potential depth and character of Palaeolithic archaeology would be to undertake a preliminary deposit model as part of the desk-based assessment. This should be prepared by a geoarchaeologist based on any available stratigraphic information, including archaeological and geotechnical data.	Noted, as above, the Geoarchaeological Desk Based Assessment included as Appendix 25.6 (Volume III) includes a preliminary deposit model which will be updated and reissued as further geoarchaeological evaluation is undertaken in agreement with the relevant Historic Environment ETG.
Historic England	Scoping Opinion, August 2021	The deposit model will help to illustrate the depth, characteristics and potential of the deposits of archaeological interest and should inform any subsequent evaluation trenching, borehole sampling and/or geophysical survey. The deposit model will also help to guide elements of the proposed	Noted, as above the Geoarchaeological Desk Based Assessment included as Appendix 25.6 (Volume III) includes recommendations for

Consultee	Date / Document	Comment	Response / where addressed in the PEIR
		mitigation strategy, such as the choice of geophysical techniques that are utilised. For example, techniques that investigate deeper deposits of archaeological interest should be considered, such as electromagnetic induction (EMI) or electrical resistivity (ERT).	areas where it may be appropriate to consider alternative methods of geophysical survey.
Historic England	Scoping Opinion, August 2021	It is stated that HDD will be used for the onshore cable works (para. 471). If this technique is to be used, the potential issues associated with bentonite slurry outbreak will need to be considered in terms of the impact (both direct and indirect) that this may have on any buried archaeological remains. This needs to be considered in the ES, and mitigation included in the Written Scheme of Investigation for archaeological mitigation.	The ES will include assessment of any potential issues associated with bentonite slurry outbreak as well as a plan for mitigation should that occur.
Historic England	Scoping Opinion, August 2021	It is noted that several sections within the scoping report contain information that may also aid the assessment of the archaeological potential of the development area, for example, information about the geology and hydrology (Section 3.1) and water resources (Section 3.3). In particular, it is important to understand how changes to the groundwater levels, water quality or the movement of water through deposits may impact the historic environment. For example, changes to groundwater levels or the mobilisation of contaminants along different pathways may impact the preservation of archaeological structures, features or remains, including palaeoenvironmental remains. In addition, soil erosion may supply fine sediments into watercourse, which could impact on channel morphology (Section 3.3.3.1). This in turn may alter bed and bank scour patterns within the channel which could potentially expose deposits/remains of archaeological interest (paragraphs 472 & 474).	The ES will include assessment of any potential effects arising from changes to groundwater levels.
Historic England	Scoping Opinion, August 2021	Additional works are planned to investigate the geology and hydrology/hydrogeology (section 3.1.4) of the development area; we would recommend that the value of this information to inform the assessment of the historic environment should be considered and discussed with the project archaeological team. This will allow any opportunities to be maximised where possible, and it will also hopefully reduce any duplication of effort. For example, any intrusive works such as boreholes that are collected for ground investigation works, and the conceptual model (paras. 436 and 438) will potentially add to the understanding of the historic environment, as well as the likely preservation conditions that may be present on the site. The conceptual model will also add to the understanding of how the proposed development may impact the historic environment. We would therefore recommend that Onshore Archaeology	The approach to Inter-relationships is given in Section 25.12 of this chapter.

Consultee	Date / Document	Comment	Response / where addressed in the PEIR
		and Cultural Heritage is added into Table 3.32 in the 'Inter-relationships' column for the 'Water Resources and Flood Risk' topic.	
Historic England	Scoping Opinion, August 2021	The nature and scope of the archaeological evaluation should be devised through consultation with the archaeological advisors at Essex Place Services (para. 591). We would be pleased to provide any further advice, and comment on the proposed methodology, as well as advising on the significance of the results. In our view, this will provide the Examining Authority with the appropriate level of information to determine the application, confident that the historic environment has been adequately assessed and that the proposed mitigation measures will be effective and proportionate to the significance of heritage assets.	Noted.
Historic England	Scoping Opinion, August 2021	Considering the amount of evaluation fieldwork that is likely to be required, we strongly recommend that discussions about this fieldwork commence at the earliest opportunity. We also advise that a timetable is agreed for each stage of the assessment process, especially because onshore transmission substation location for North Falls yet to be confirmed by National Grid.	Noted, consultation with the relevant members of the Historic Environment ETG is underway.
Historic England	Scoping Opinion, August 2021	Some of the work associated with the proposed Project may impact on the groundwater levels or movement of water through deposits. For example, the need for foundations for the substation, compression of deposits through the construction of elements or the movement of vehicles, the reduction in recharge values, or the need to dewater areas during construction. The impact that this work may have on the historic environment needs to be considered as any changes may affect preservation conditions within the area of the proposed Project or in nearby deposits, which in turn may result in the damage and/or loss of archaeological remains (para. 572). For example, the potential impact of dewatering on any well-preserved, waterlogged archaeological and palaeoenvironmental remains needs to be investigated along the onshore cable corridor.	The ES will include assessment of any potential effects arising from changes to groundwater levels.
Historic England	Scoping Opinion, August 2021	We would recommend that the Historic England document Preserving Archaeological Remains (2016) is referred to aid the discussions of the potential impacts to the historic environment as well as the approaches used to investigate them: https://historicengland.org.uk/images-books/publications/preserving-archaeological-remains/ .	Noted, will be used to aid discussions regarding mitigation approaches at the ES stage.

Consultee	Date / Document	Comment	Response / where addressed in the PEIR
Historic England	Scoping Opinion, August 2021	The Historic England document Piling and Archaeology (2019) should be also referred to as some of the elements of the development will involve piling: https://historicengland.org.uk/images-books/publications/piling-and-archaeology/	Noted, will be used to aid discussions regarding mitigation approaches at the ES stage.
Historic England	Scoping Opinion, August 2021	Historic England's Regional Science Advisor will be pleased to provide technical advice and guidance concerning the appropriate techniques for archaeological and palaeoenvironmental assessment.	Noted. Historic England's Science Advisor is a member of the Historic Environment ETG.
Historic England	Scoping Opinion, August 2021	We appreciate that attention will be given to assessment of the setting of heritage assets and will be addressed within respective chapters of the ES for onshore and offshore archaeology and cultural heritage.	Noted. Initial Setting Assessments are presented in Appendix 25.3 (onshore) and Appendix 25.4 (offshore) (Volume III). These will be built upon and updated as the Project is refined and presented at ES.
Historic England	Scoping Opinion, August 2021	We note the initial proposed SLVIA assessment (Section 4.1 and Table 4.1, and also paras. 589 and 738) and recommend the SLVIA is supplemented with heritage specific viewpoints (photographs, photomontages and wirelines) that illustrate the ES and support the results of the heritage assessment. If these are to be presented in the seascape, landscape and visual chapter, the assessment needs to be clearly set out and cross-referenced with the heritage chapter. We look forward to constructive engagement with the applicant, at an early stage, to agree the proposed key viewpoints for visualisations to assess the impact of offshore infrastructure on designated heritage assets.	Noted, will be included in the ES. An Initial Setting Assessment of offshore infrastructure is presented in Appendix 25.4 (Volume III) and will be updated at ES.
Historic England	Scoping Opinion, August 2021	We note the proposed 50km search radius (para. 711 and Figure 4.1) around the array areas. Given the estimated maximum rotor tip height of 397m, which is very high, we would recommend that the search radius for cultural heritage is extended to 70km, and should include highly-graded heritage assets, for example, on the Dengie Peninsula.	The study area for the SLVIA has been increased to 60km, and this has been agreed through follow on consultation (SLVIA Topic Group Meeting – 7 th December 2022).
Historic England	Scoping Opinion, August 2021	We note that para. 713 mentions the seascape character assessment published by the MMO and we add that the MMO seascape data does include Historic Seascape Characterisation (HSC) data as a means to derive a sense of character. However, it is important to add that the effectiveness of HSC as a means to understand how seascape can accommodate change will depend on how the available methodology is used, as mentioned in Table 2.26.	Noted. The Historic Seascape Characterisation is considered as part of Chapter 16 Offshore Archaeology and Cultural Heritage (Volume I).

Consultee	Date / Document	Comment	Response / where addressed in the PEIR
Historic England	Scoping Opinion, August 2021	It is likely that the proposed onshore substation will have an impact on the significance of designated and non-designated heritage assets, in terms of the changes to their settings and their relationships to the wider landscape.	Noted. An Initial Setting Assessment of the onshore substation is presented in Appendix 25.3 (Volume III) and will be updated at ES.
Historic England	Scoping Opinion, August 2021	A ZTV should be produced in relation to the designated heritage assets, and any significant historic landscape elements, and used to inform the selection of potential viewpoints to assess the impact of the proposed substation on the setting of heritage assets. The assessment should define a study area according to the sensitivity of the receiving environment and the potential impacts of the project.	The ZTVs are provided in Chapter 30 Landscape and Visual Impact Assessment (Volume I) and have been used to inform early consultation with the relevant Historic Environment ETG (who were jointly consulted with the LVIA ETG) and the Onshore Infrastructure Setting Assessment (Appendix 25.3, Volume III).
Historic England	Scoping Opinion, August 2021	In terms of the location of the proposed substation, we would be pleased to advise on the area of study for designated heritage assets, and the extent of ZTV, once the scoping area has been narrowed down. We note that a 5km project boundary has been proposed (para. 589) but the zone of theoretical visibility could be considerably larger – and this cannot be agreed until the location of the proposed substation has been published. We also look forward to constructive engagement with the applicant to agree the proposed key viewpoints for visualisations.	The ZTVs are provided in Chapter 30 Landscape and Visual Impact Assessment and have been used to inform early consultation with the relevant Historic Environment ETG (who were jointly consulted with the LVIA ETG) and the Onshore Infrastructure Setting Assessment (Appendix 25.3 of the PEIR, Volume III). The Setting Assessment includes viewpoints agreed with the relevant members of the Historic Environment ETG.
Historic England	Scoping Opinion, August 2021	The setting of heritage assets is not just restricted to visual impacts and other factors should be considered, in particular noise, vibration, light, odour, traffic assessments, during construction and operation. Where relevant, the cultural heritage chapter should also be cross-referenced to other relevant chapters, and we advise that all supporting technical heritage information is included as appendices.	The approach to inter-relationships is given in Section 25.12 of this chapter.
Historic England	Scoping Opinion, August 2021	In terms of the assessment of setting, we consider the analysis of setting (and the impact upon it) as a matter of qualitative and expert judgement which cannot be achieved solely by use of systematic matrices or scoring systems. Historic England, therefore, recommends these should be in an appendix and seen only as material to support a clearly expressed and non-technical narrative argument within the cultural heritage chapter. The EIA should use the ideas of benefit, harm and loss to set out 'what matters and why' in terms of the heritage assets' significance and setting, together with the effects of the development upon them.	Noted.

Consultee	Date / Document	Comment	Response / where addressed in the PEIR
Historic England	Scoping Opinion, August 2021	In addition, the appreciation of the value of the historic environment should not rely solely on an appreciation of the location of designated heritage assets but consider the interactions with the wider landscape.	Noted.
Historic England	Scoping Opinion, August 2021	The assessment should be prepared and submitted following the approach set out in Historic Environment Good Practice Advice in Planning Note 3, The Setting of Heritage Assets (2017): https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/	Noted.
Historic England	Scoping Opinion, August 2021	We note the proposed cumulative impact assessment (paras. 102-10, 580-2, 731 and 736). It is quite possible there will be projects within the onshore substation study area that will need to be considered in terms of cultural heritage once the study area has been narrowed down. This work should not, therefore, be scoped out at this stage (paras. 732 and 737). We look forward to constructive engagement with the applicant, at an early stage, to agree the proposed key viewpoints for visualisations to assess the cumulative impact of the Project on designated heritage Assets.	Noted, the approach to cumulative effects is presented in Section 25.9 of this chapter and will be assessed in the ES.
Historic England	Scoping Opinion, August 2021	By following planning policy and guidance we would expect the project to be creative in how it might offer opportunities for the enhancement of heritage assets, and how the project might deliver public (heritage) benefit. The ES should aim to make clear public heritage benefits and outreach as part of planned mitigation.	Noted, to be included in the ES.
Historic England	Scoping Opinion, August 2021	We would advise the ES should put forward proposals for the use, display and interpretation of archaeological evidence that will be revealed by the development and to provide enhancement to heritage assets and secure wide heritage benefits as part of the Project and we would be pleased to provide advice about potential heritage schemes.	Noted, to be included in the ES.
Historic England	Scoping Opinion, August 2021	We have serious concerns about the proposed strategy for assessment of onshore archaeology in the Scoping Report. In our opinion, this strategy could fail to adequately assess the full extent and significance of archaeological remains within the DCO application area. There is a considerable risk that nationally important heritage assets, in the form of previously unknown buried archaeological deposits, could be missed by the proposed strategy.	The EIA strategy for onshore archaeology and cultural heritage has been agreed with the relevant members of the Historic Environment ETG. Consultation with the ETG will be ongoing through the DCO application and through post-consenting mitigation to ensure that nationally, regionally or locally important heritage assets will not be missed.

Consultee	Date / Document	Comment	Response / where addressed in the PEIR
Historic England	Scoping Opinion, August 2021	We strongly recommend that the geophysical survey should be undertaken across the whole DCO application area, rather than targeted or priority areas. This should be followed by trial-trenched evaluation in the area of the proposed substation and in the areas of construction compounds, as well as in pinch-point locations along the corridor route. Palaeoenvironmental assessment should be undertaken where the desk-based assessment, and other surveys, indicate there is potential for the survival of palaeoenvironmental remains.	The EIA strategy for onshore archaeology and cultural heritage has been agreed with the relevant members of the Historic Environment ETG. The approach to geophysical survey and trial trenching is being agreed through Written Schemes of Investigation in consultation with the relevant members of the Historic Environment ETG. The strategy takes an integrated approach with Geoarchaeology.
Historic England	Scoping Opinion, August 2021	We also have serious concerns about the prematurity of the submission in terms of the onshore scoping area, covering more than half the Tendring peninsula. No cable corridor has been defined and no substation location has been identified in the Scoping Report. We have, therefore, been unable to provide any specific comments at this stage. We would recommend that the scoping exercise for onshore work is repeated once the grid access has been determined in January 2022.	Noted, since scoping the onshore project area and its design have undergone refinement. The Project Description is included in Chapter 5 of the PEIR (Volume I). The study areas for PEIR Chapter 25 Onshore Archaeology and Cultural Heritage (Volume I) area set out in Section 25.3.1 of this document and have been agreed with the relevant members of the Historic Environment ETG.
Historic England	Scoping Opinion, August 2021	We should like to stress that this response is based on the information provided in this consultation. For the avoidance of doubt, this does not affect our obligation to provide further advice and, potentially, to object to specific proposals which may subsequently arise where we consider that the scale, massing and detailed design would have an adverse effect upon the immediate and wider historic environment.	Noted, consultation with the Historic Environment ETG is ongoing.
ECC Place Services/Historic England	ETG Meeting 1 and Evidence Plan Agreement Log 2021	It was agreed that the list of baseline data sources set out in Section 3 of the Archaeology and Cultural Heritage was sufficient to inform the onshore EIA, following the provision of further information regarding the nature of the walkover surveys. It was advised that emphasis should be placed on identifying non-designated heritage assets in the absence of an adopted local list within the Tendring District. It was also recommended by ECC that the Portable Antiquities Scheme be consulted, particularly for areas with little or no HER or other data. These sources would need to be supplemented with an appropriate level of fieldwork.	The results of the heritage walkover survey are provided in Appendix 25.5 (Volume III). The Portable Antiquities Scheme data was reviewed and included as part of the high level baseline assessments presented in Appendices 25.1 and 25.2 (Volume III).

Consultee	Date / Document	Comment	Response / where addressed in the PEIR
ECC Place Services/Historic England	ETG Meeting 1 and Evidence Plan Agreement Log, July 2021	For the intertidal areas, ECC recommended that a walkover survey would be beneficial for the recording of any archaeological/historical remains that may be visible at low tide.	The results of the heritage walkover survey are provided in Appendix 25.5 (Volume III).
ECC Place Services/Historic England	ETG Meeting 2 and Evidence Plan Agreement Log, March 2022	Agreement was sought on whether the proposed use of a geoarchaeological desk-based assessment is sufficient to define the geoarchaeological, palaeoenvironmental and palaeolithic baseline for EIA. ECC commented that further information will be required which may be obtained prior to the submission of the application from site investigation works which could be combined with geoarchaeological investigations. Historic England is of the view that the geoarchaeological DBA is not, by itself, sufficient to define the baseline for EIA. It should be supported by field assessment and deposit modelling.	An initial Geoarchaeological Desk Based Assessment is included as Appendix 25.6 (Volume III) of the PEIR. It includes an initial deposit model and makes recommendations for further evaluation. The scope of further evaluation will be agreed with the relevant members of the Historic Environment ETG. The Geoarchaeological Desk Based Assessment will be updated and reissued with the results of any agreed geoarchaeological evaluation and will include an updated deposit model presented at ES.
ECC Place Services/Historic England ECC Place Services/Historic England	ETG Meeting 2 and Evidence Plan Agreement Log, March 2022	Agreement was sought on the proposed approach to pre-consent geophysical surveys, in seeking to target sensitive areas (areas of key project infrastructure and archaeological sensitivity) first and then to collect as much further data as possible. Agreement was sought as to whether this approach was sufficient to inform the baseline for EIA. ECC commented that the geophysical survey should aim to provide full coverage of the project area once the route has been finalised. This would then inform on the areas required for targeted trial trenching prior to the submission of the application and to inform the EIA. Historic England would recommend that geophysical survey should be carried out across the whole DCO application area, rather than targeting sensitive areas. The geophysical survey should be tested using (and supported by) targeted trial trenching and geoarchaeological assessment, to establish the significance of any buried archaeological and geoarchaeological remains.	Full coverage geophysical survey is underway (subject to access availability and ground conditions), due to the ongoing programme it was not possible to report on all the results at the time of writing this chapter. The results collected to date are presented in Appendix 25.8 (Volume III). Details of the results from all of the geophysical surveys carried out will be included in the ES. The programme for targeted trial trenching will be agreed through a separate survey-specific Written Scheme of Investigation which will include a trenching plan. The Geoarchaeological Desk Based Assessment has included recommendations to include deeper test pits during the trial trenching as well as other potential evaluation methods.
ECC Place Services/Historic England	ETG Site Visit in July 2022 and Evidence Plan	The Historic Environment ETG agreed to the proposed heritage viewpoints in relation to the project onshore substation (CH01, CH02, CH03). An additional heritage viewpoint was added (CH04) from the non-designated	The Onshore Infrastructure Setting Assessment, including these viewpoints, is included in Appendix 25.3 (Volume III).

Consultee	Date / Document	Comment	Response / where addressed in the PEIR
	Agreement Log, July 2022	henge site (Little Bromley Hall, EHER 2460) located at TM 274 089, south of the Church of St Mary's (NHLE 1337175), as this asset is likely to become scheduled prior to DCO submission and visibility of the substation is likely.	
ECC Place Services/Historic England	ETG Site Visit in July 2022 and Evidence Plan Agreement Log, July 2022	It was agreed that there is no requirement for a heritage viewpoint from the Scheduled settlement site of a Neolithic enclosure (NLHE 1002157), located NNE of Lawford House, as the onshore substation is unlikely to be visible given the intervening vegetation buildings and topography.	The rationale for this is included in Appendix 25.3 (Volume III).
ECC Place Services/Historic England	ETG Meeting 3 and Evidence Plan Agreement Log, August 2022	It was agreed that a single Written Scheme of Investigation will be drafted detailing the geophysical survey methodology for the project, but will remain a live document and be updated with Phase 2 survey locations via submission of new figures and an update to the survey rationale table. Any alternative geophysical survey requirements (such as GPR or EM) will be detailed in a separate survey-specific Written Scheme of Investigation. On the basis of feedback from the Historic Environment ETG a selection of areas which appear archaeologically 'blank' were included within the Phase 1 geophysical survey.	The Written Scheme of Investigation for Phase 1 Geophysical Survey was approved by the Historic Environment ETG on 23 rd September 2022.
ECC Place Services/Historic England	ETG Meeting 4 and Evidence Plan Agreement Log, February 2023	The proposals for joint pre-consent archaeological evaluation (trial trenching) by NFOW and Five Estuaries Offshore Wind Farm Limited for the Projects' onshore substation zones was discussed, and suggested amendments to proposed trench locations and the evaluation methodology were raised by Historic England and ECC Places Services.	At the time of writing the scope of the proposed joint onshore substation archaeological evaluation (trial trench plan) and Written Scheme of Investigation is in the process of being agreed by NFOW, Five Estuaries Offshore Wind Farm Limited and the Historic Environment ETG.

25.3 Scope

25.3.1 Study area

7. The onshore project area includes the following elements:
 - Landfall;
 - Onshore cables and associated link boxes;
 - Onshore substation; and
 - Connection to the National Grid.
8. All elements of the Project which fall within the intertidal area are assessed within Chapter 16 Offshore Archaeology and Cultural Heritage (Volume I).
9. Two study areas have been agreed with the Historic Environment ETG for onshore archaeology and cultural heritage on the basis of:
 - Non-Designated Heritage Assets Study Area – known non-designated heritage assets, potential buried archaeological remains and previously unrecorded above ground heritage assets within 500m of the onshore project area (Figures 25.2a-j, Volume II); and
 - Designated Heritage Assets Study Area— designated heritage assets within 1km of the onshore project area and 5km of the onshore substation zone, to inform a setting assessment of heritage assets identified as potentially being affected by the development through a change in their setting (Figures 25.1a-ij, Volume II).
10. Designated heritage assets along the coast which could be affected by the presence of offshore infrastructure will be included in the assessment. This assessment will be based on professional judgement and use of available LVIA toolkits, e.g., Zones of Theoretical Visibility (ZTVs) developed by Seascope, Landscape and Visual Impact Assessment (SLVIA) consultants, and will use the study areas applied during the SLVIA assessment (Figure 29.1.1, Volume II).

25.3.2 Realistic worst-case scenario

11. The final design of North Falls will be confirmed through detailed engineering design studies that will be undertaken post-consent. In order to provide a precautionary but robust impact assessment at this stage of the development process, realistic worst-case scenarios have been defined in terms of the potential effects that may arise. This approach to EIA, referred to as the Rochdale Envelope, is common practice for developments of this nature, as set out in Planning Inspectorate Advice Note Nine (2018). The Rochdale Envelope for a project outlines the realistic worst-case scenario for each individual impact, so that it can be safely assumed that all other scenarios within the design envelope will have less impact. Further details are provided in Chapter 6 EIA Methodology (Volume I).
12. The realistic worst-case scenarios for the likely significant effects scoped into the EIA for the onshore archaeology and cultural heritage assessment are summarised in Table 25.2. These are based on North Falls parameters

described in Chapter 5 Project Description (Volume I), which provides further details regarding specific activities and their durations.

Table 25.2 Realistic worst case scenarios

Potential impact	Parameter	Notes
Construction		
Impact 1: Direct Physical Impact on (permanent change to) Designated Heritage Assets Impact 2: Direct Physical Impact on (permanent change to) Non-designated Heritage Assets	<p><u>Landfall HDD (temporary works) physical parameters:</u> HDD temporary works area (4 circuits) = 100 x 200m Transition joint bay size = 4 x 15m Maximum no. of transition joint bays = 4 Maximum HDD depth = 20m Maximum length of HDD = 1,100m</p> <p><u>Onshore cable route construction physical parameters:</u> Working width = 60m open trench, 82m at shallow HDD crossings, 122m at deeper HDD crossings Corridor length = 24km Cable trench width (max.) = 3.75m (at top) No. of trenches = 4 Maximum cable trench depth = 2m Haul road width = 6m Jointing bays = Maximum of 192 (approximately every 500m) buried below ground Jointing bay construction footprint (per bay) = 13 x 5m Jointing bay depth = 2m Temporary construction compound footprint = 150 x 150m (general cable construction compounds) to 100 x 100m (small cable construction compounds). No. of compounds (est.) = 7 Replanting restrictions = 37m swathe in which only shrubs (growth up to max. 5m height) can be planted.</p> <p><u>Trenchless crossings physical parameters:</u> Maximum width of buried cable = 122m Maximum trenchless crossing depth = 20m</p>	The worst case scenario represents the maximum footprint and ground disturbance within the onshore project area in which potential direct physical disturbance to designated and non-designated heritage assets could occur.

Potential impact	Parameter	Notes
	<p>Trenchless crossing compound dimensions = 80 x 120m (major HDD compounds) to 40 x 120m (minor HDD compounds)</p> <p><u>Onshore substation construction physical parameters:</u> Maximum platform footprint = 267 x 300m Indicative construction compound dimensions 150 x 250m</p>	
<p>Impact 3: Indirect Physical Impact on (permanent change to) Designated Heritage Assets</p> <p>Impact 4: Indirect Physical Impact on (permanent change to) Non-designated Heritage Assets</p>	<p><u>Landfall HDD physical parameters:</u> Transition joint bay size = 4 x 15m Maximum no. of transition joint bays = 4 Maximum HDD depth = 20m Maximum number of HDDs = 5 Maximum length of HDD = 1,100m</p> <p><u>Onshore cable route construction physical parameters:</u> Working width = 60m open trench, 82m at shallow HDD crossings, 122m at deeper HDD crossings Corridor length = 24km Cable trench width (max.) = 3.75m No. of trenches = 4 Maximum cable burial depth = 2m Minimum cable burial depth at = 0.9m Jointing bays = Maximum of 192 (approximately every 500m) buried below ground Jointing bay construction footprint (per bay) = 13 x 5m Jointing bay depth = 2m Temporary construction compound footprint = 150 x 150m (general cable construction compounds) to 100 x 100m (small cable construction compounds). No. of compounds (est.) = 7 Replanting restrictions = 37m swathe in which only shrubs (growth up to max. 5m height) can be planted.</p>	<p>The worst-case scenario represents the maximum potential for changes in ground conditions within the Onshore project area in which the potential disturbance to designated and non-designated heritage assets could occur.</p>

Potential impact	Parameter	Notes
	<u>Trenchless crossings physical parameters:</u> Maximum width of buried cable = 122m Maximum trenchless crossing depth = 20m Trenchless crossing compound dimensions = 80 x 120m (major HDD compounds) to 40 x 120m (minor HDD compounds) <u>Onshore substation physical parameters:</u> Maximum onshore substation platform footprint = 267 x 300m Indicative construction compound dimensions 150 x 250m	
Impact 5: Temporary Change to the Setting of Designated Heritage Assets which could affect their Heritage Significance Impact 6: Temporary Change to the Setting of Non-designated Heritage Assets which could affect their Heritage Significance	<u>Offshore infrastructure construction duration:</u> Construction duration = 3 years <u>Landfall duration:</u> 13 months (of which HDD = 6 months) HDD to include 24 hour / 7 days working where required <u>Onshore cable route duration:</u> Overall duration = 24 months Cable installation = 12 months Major HDD (each location) = 8 months (of which HDD = 4 months) Minor HDD crossings = 2 months Major HDD crossings to include 24 hour / 7 days working where required. <u>Onshore substation durations:</u> Construction duration = 6 months preparation, 24 months construction	The worst case scenario represents the maximum duration in which temporary change to the setting of designated and non-designated heritage assets could occur.
Operation		
Impact 7: Permanent Change to the Setting of Designated Heritage Assets which could affect their Heritage Significance	<u>Offshore infrastructure parameters:</u> Up to 72 wind turbines Array areas = 150km ²	The worst case scenario represents the maximum intrusive effect of the permanent above ground structures (i.e., maximum height and massing) in which a

Potential impact	Parameter	Notes
Impact 8: Permanent Change to the Setting of Non-designated Heritage Assets which could affect their Heritage Significance	<p>Closest distance to shore = 22.5km</p> <p>Two offshore substation platforms (one for each array area)</p> <p>Maximum rotor tip height = 397m above Mean High Water Springs (MHWS)</p> <p>Operational lifetime expected to be 30 years</p> <hr/> <p><u>Onshore substation parameters:</u></p> <p>Permanent substation footprint = 267 x 300m</p> <p>Maximum equipment height (lightning masts) = 18m</p> <p>Operational lifetime expected to be 30 years</p>	permanent change to the setting of designated and non-designated heritage assets could occur.
Decommissioning		
<p>No final decision has yet been made regarding the final decommissioning policy for the onshore project infrastructure including landfall, onshore cable corridor(s) and onshore substation. It is also recognised that legislation and industry best practice change over time. However, it is likely that the onshore project equipment, including the cable, will be removed, reused, or recycled where possible and the transition bays and cable ducts being left in place. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and will be agreed with the regulator. It is anticipated that for the purposes of a worst case scenario, the impacts will be no greater than those identified for the construction phase.</p> <p>Assuming that provision is made for methods of removal which minimise further impact to the wider area, it is reasonable to assume that any potential damage upon designated and non-designated heritage assets would have already occurred as part of construction activities. However, it is noted that the demolition of buildings and infrastructure can have an impact greater than that of construction e.g., if grubbing out of foundations or remediation of contaminants is required. As such, the worst case scenario with regard to decommissioning cannot be ascertained until the decommissioning plan is finalised.</p> <p>Changes to setting may be present as a result of visual and audible impacts associated with decommissioning activities.</p> <p>Changes to the setting of heritage assets are considered to be temporary in duration, occurring in association with the decommissioning phase. As such, the worst case scenario as outlined for the construction phase in relation to temporary changes to the setting of heritage assets is unlikely to be exceeded as a result of decommissioning activities.</p>		

25.3.3 Summary of mitigation embedded in the design

13. This section outlines the embedded mitigation relevant to onshore archaeology and cultural heritage assessment, which has been incorporated into the design of North Falls (Table 25.3). Where other mitigation measures are proposed, these are detailed in the impact assessment (Section 25.4), where applicable.

Table 25.3 Embedded mitigation measures

Parameter	Mitigation measures embedded into North Falls design
Mitigation by site selection	<p>The onshore project area and onshore substation zone have been defined following an extensive site selection process, which has accounted for environmental, engineering, planning and land requirements to identify an optimal project location. The site selection process is described in detail in Chapter 4 Site Selection and Assessment of Alternatives (Volume I). The site selection process has included consideration of all designated heritage assets and has avoided direct physical impacts upon designated heritage assets as part of the site selection process.</p> <p>The site selection process has also sought to avoid all direct physical impacts on non-designated and potential heritage assets, wherever possible, using the datasets available at the time of assessment.</p>
Outline Written Scheme of Investigation (WSI)	<p>The Project will submit an Outline WSI as part of the ES to accompany the DCO application. This document will outline the strategy to undertake additional programmes of survey and evaluation post-consent and will include a range of likely mitigation options and responses to be utilised under various scenarios.</p>

14. As the EIA progresses, further route refinement and micro-siting will be carried out, informed directly by the results of ongoing archaeological surveys i.e. geophysical survey, to ensure areas of high archaeological potential are avoided wherever possible within the confines of engineering and other environmental constraints.
15. As part of the embedded mitigation, the Project will submit a project-specific draft Outline WSI as part of the final DCO submission, outlining a commitment to undertake additional programmes of survey and evaluation post-consent to inform the archaeological mitigation requirements. The Outline WSI will be agreed in consultation with the Historic Environment ETG and will be prepared in accordance with industry good practice guidance provided by the Chartered Institute for Archaeology (CIfA).

25.4 Assessment methodology

25.4.1 Legislation, guidance and policy

25.4.1.1 National Policy Statements

16. The assessment of likely significant effects upon onshore archaeology and cultural heritage has been made with specific reference to the relevant National Policy Statements (NPS). These are the principal decision-making documents for Nationally Significant Infrastructure Projects (NSIPs). Those relevant to the Project are:
- Overarching NPS for Energy (EN-1) (Department of Energy and Climate Change (DECC) 2011a);

- NPS for Renewable Energy Infrastructure (EN-3) (DECC 2011b); and
 - NPS for Electricity Networks Infrastructure (EN-5) (DECC 2011c).
 - Draft Overarching NPS for Energy (EN-1) (BEIS 2021a);
 - Draft NPS for Renewable Energy Infrastructure (EN-3) (BEIS 2021b); and
 - Draft NPS for Electricity Networks Infrastructure (EN-5) (BEIS 2021c).
17. The specific assessment requirements for onshore archaeology and cultural heritage, as detailed in the NPS, are summarised in Table 25.4 together with an indication of the section of the PEIR chapter where each is addressed.
18. The UK Government announced a review of the existing NPSs within its December 2020 Energy White Paper (HM Government, 2020) and issued a draft version of Overarching NPS for Energy EN-1, NPS for Renewable Energy Infrastructure EN-3 and NPS for Electricity Networks Infrastructure EN-5 for consultation on 6th September 2021 (BEIS, 2021a; BEIS, 2021b; BEIS, 2021d). At the time of writing this PEIR chapter, final versions of the revised NPSs are not available.
19. The specific assessment requirements for onshore archaeology and cultural heritage, as detailed in the NPS, are summarised in Table 25.4 together with an indication of the section of the PEIR chapter or accompanying appendix, where each is addressed.

Table 25.4 NPS assessment requirements

NPS requirement	NPS reference	PEIR reference
Overarching NPS for Energy (EN-1)		
'As part of the Environmental Statement (ES) the applicant should provide a description of the significance of the heritage assets affected by the proposed development and the contribution of their setting to that significance. The level of detail should be proportionate to the importance of the heritage assets and no more than is sufficient to understand the potential impact of the proposal on the significance of the heritage asset.'	Section 5.8.8	The significance and value of the heritage assets considered in this chapter have been detailed in Section 25.5. An initial setting assessment and screening exercise has been undertaken for the onshore infrastructure (Appendix 25.3, Volume III) and the offshore infrastructure (Appendix 25.4, Volume III), the results of which have informed Sections 25.5 and 25.7. Issues relating to the setting of offshore and intertidal heritage assets have been considered as part of Chapter 16 Offshore Archaeology and Cultural Heritage (Volume I).
'Where a development site includes, or the available evidence suggests it has the potential to include, heritage assets with an archaeological interest, the applicant should carry out appropriate desk-based assessment and, where such desk-based research is insufficient to properly assess the interest, a field evaluation. Where proposed development will affect the setting of a heritage asset, representative visualisations may be necessary to explain the impact.'	Paragraph 5.8.9	Section 25.5 of this chapter has been informed by the Cable Landfall Archaeological Desk Based Assessment (ADBA) (Appendix 25.1, Volume III), the Cable and Substation ADBA (Appendix 25.2, Volume III), initial Setting Assessments (Appendix 25.3 and Appendix 25.4, Volume III), a Heritage Walkover Survey (Appendix 25.5, Volume III), a Geoarchaeological DBA (Appendix 23.6, Volume III) and Geophysical Survey (Appendix 25.8, Volume III).
'The applicant should ensure that the extent of the impact of the proposed development on the significance of any heritage assets affected can be	Section 5.8.10	This PEIR chapter provides an account of the potential impact of the Project upon heritage assets and their significance (Section 25.5 and Section 25.7).

NPS requirement	NPS reference	PEIR reference
adequately understood from the application and supporting documents.'		
NPS for Renewable Energy Infrastructure (EN-3)		
'Consultation with the relevant statutory consultees should be undertaken by the applicants at an early stage of the development.'	Section 2.6.140	Regular consultation has been undertaken with the relevant statutory consultees, and through the application of the Evidence Plan Process (EPP), as outlined in Section 25.2. Consultation will be ongoing throughout the EIA process.
'Assessment should be undertaken as set out in Section 5.8 of EN-1. Desk-based studies should take into account any geotechnical or geophysical surveys that have been undertaken to aid the wind farm design.'	Section 2.6.141	This PEIR chapter has been undertaken in accordance with section 5.8 of EN-1, as detailed above. This chapter has been informed by available geophysical survey information (Appendix 25.8, Volume III).
NPS for Electricity Networks Infrastructure (EN-5)		
...developers will be influenced by Schedule 9 to the Electricity Act 1989, which places a duty on all transmission and distribution licence holders, in formulating proposals for new electricity networks infrastructure, to "have regard to the desirability... of protecting sites, buildings and objects of architectural, historic or archaeological interest; and... do what [they] reasonably can to mitigate any effect which the proposals would have on the... sites, buildings or objects."	Paragraph 2.2.6	Potential impacts upon sites and objects of archaeological interest onshore are set out in Section 25.7 along with a proposed approach to mitigation.
Draft Overarching NPS for Energy (EN-1)		
<p>The applicant is encouraged, where opportunities exist, to prepare proposals which can make a positive contribution to the historic environment, and to consider how their scheme takes account of the significance of heritage assets affected. This can include, where possible:</p> <ul style="list-style-type: none"> • enhancing, through a range of measures such as sensitive design, the significance of heritage assets or setting affected • considering measures that address those heritage assets which are at risk or which may become at risk, as a result of the Scheme • considering how visual or noise impacts can affect heritage assets, and whether there may be opportunities to enhance access to, or interpretation, understanding and appreciation of, the heritage assets affected by the scheme 	Paragraph 5.9.14	Potential opportunities for enhancement of the archaeological record will be presented at the ES stage following refinement of the onshore project area.
Draft NPS for Renewable Energy Infrastructure (EN-3)		

NPS requirement	NPS reference	PEIR reference
There are no material changes as with the existing NPS EN-3 and therefore there are no new relevant paragraphs in relation to this chapter.		
Draft NPS for Electricity Networks Infrastructure (EN-5)		
There are no material changes as with the existing NPS EN-5 and therefore there are no new relevant paragraphs in relation to this chapter.		

25.4.1.2 Other legislation, policy and guidance

20. In addition to the NPS, there are a number of pieces of legislation, policy and guidance applicable to the assessment of onshore archaeology and cultural heritage. Further detail is provided in Chapter 3 Policy and Legislative Context (Volume I).

25.4.1.2.1 Legislation

21. Works affecting Listed Buildings and Conservation Areas are subject to the Planning (Listed Buildings and Conservation Areas) Act 1990, while those affecting Scheduled Monuments and Archaeological Areas of Importance must consider the Ancient Monuments and Archaeological Areas Act 1979 (as amended). Additionally, certain hedgerows may be deemed to be historically important under the criteria set out in the Hedgerow Regulations 1997, as amended by The Hedgerows (England) (Amendment) Regulations 2002.
22. In the context of listed buildings, Regulation 3 of the Infrastructure Planning (Decisions) Regulations 2010 (the 'Decisions Regulations') sets out that it is necessary for the Secretary of State to "have regard to the desirability of preserving the listed building or its setting or any features of special architectural or historic interest which it possesses". This language differs from the duty in section 66 of the Planning (Listed Buildings and Conservation Areas) Act 1990 for a decision maker to have "special regard" and indicates that Parliament intends that a particular approach be taken in the case of NSIPs. The Decisions Regulations have been taken into account in the preparation of this chapter.

25.4.1.2.2 Policy

23. This assessment has also been undertaken in a manner consistent with the NPPF, a revised version of which was published by the Ministry of Housing, Communities and Local Government (MHCLG) in July 2021, replacing the original policy from March 2012. Provision for the historic environment is principally given in section 16: 'Conserving and enhancing the historic environment' of the NPPF, which directs local authorities to set out "*a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats*". Local planning authorities should recognise that heritage assets are "*an irreplaceable resource and should be conserved in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations*" (MHCLG, 2021).
24. The aim of NPPF section 16 is to ensure that Regional Planning Bodies and local authorities, developers and owners of heritage assets adopt a consistent and holistic approach to their conservation and to reduce complexity in planning policy relating to proposals that affect them.
25. To summarise, UK government guidance provides a framework which:
- Recognises that heritage assets are an irreplaceable resource;
 - Requires applicants to provide a level of detail that is proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance;
 - Takes into account the desirability of sustaining and enhancing the significance of heritage assets, including any contribution made by their setting, and putting them to viable uses consistent with their conservation;

- Places weight on the conservation of designated heritage assets (which include world heritage sites, scheduled monuments, listed buildings, protected wreck sites, registered parks and gardens, registered battlefields or conservation areas), with any anticipated substantial harm weighed against the public benefits of the proposal;
- Requires applicants to include a consideration of the effect of an application on the significance of non-designated heritage assets, giving regard to the scale of any harm or loss and the significance of the heritage asset;
- Regards proposals that preserve those elements of the setting that make a positive contribution to the asset (or which better reveal its significance) favourably; and
- Requires developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and impact, and to make this evidence (and any archive generated) publicly accessible.

26. The NPPF's associated Planning Practice Guidance (PPG) 'Conserving and enhancing the historic environment', published in 2014 and updated 2019, (MHCLG, 2019) includes further information and guidance on how national planning policy is to be interpreted and applied locally. Although the PPG is an important and relevant consideration with respect to North Falls, EN-1 (the Overarching NPS for Energy) is the key decision-making document.
27. This chapter also takes into account regional and local guidance relevant to the study area and the Project.
28. The regional policy relevant to the study area comprises the Tendring Local Plan. Due to strategic cross-boundary policies and allocations, Tendring, Braintree and Colchester's Local Plan share an identical Section 1. Tendring specific policies and allocations can be found within Section 2 of the Local Plan.
29. Section 1 of the local plan (Tendring District Local Plan 2013-2033 and Beyond: North Essex Authorities, 2021) details the direction that the North Essex Authorities, including Tendring District Council wish to take their policies and allocations.
30. Section 2 of the Local Plan used for planning decisions was adopted on 25th January 2022 (Tendring District Local Plan 2013-2033 and Beyond, 2022).
31. Objective 7 Historic Environment states that: To conserve and enhance Tendring District's historic environment, including: heritage; respecting historic buildings and their settings; heritage assets; landscapes; links; and views. Policy SPL3 gives the requirements for Sustainable Design and states with particular relation to heritage that "the design and layout of the development maintains or enhances important existing site features of landscape, ecological, heritage or amenity value".

25.4.1.2.3 Standards and guidance

32. Standards and guidance are given by the Government on how the historic environment can be enhanced and conserved through the planning process and a number of standard and guidance documents have been produced by Historic England and ClfA regarding assessing the Historic Environment and implementing a best practice approach.

Table 25.5 Standards and guidance documents relevant to assessment of the historic environment

Guidance	Relevant to assessment
Conserving and enhancing the historic environment (Ministry of Housing, Communities & Local Government (2014, updated 2019))	Sets out advice to ensure the Government's policies on protecting and enhancing the historic environment are understood and followed when making planning decisions. The advice details the main legislative framework for planning and the historic environment, followed by details on how planning decisions should consider the historic environment.
The Historic Environment in Local Plans: Historic Environment Good Practice Advice in Planning 1 (Historic England, 2015a)	Details the processes involved in the decision-making process for the historic environment at a local planning level, providing guidance in implementing the NPPF requirements. Guidance within the document is relevant to ensuring data and documentation for the historic environment is of the standard required.
Managing Significance in Decision-Taking in the Historic Environment: Historic Environment Good Practice Advice in Planning 2 (Historic England, 2015b)	Provides advice and guidance on assessing the significance of heritage assets, and how to understand the nature, extent and level of significance. It provides guidance on how to understand the impact of a proposed development on the heritage significance of an asset and how to identify ways to avoid, minimise or mitigate that impact which meets the objectives of the NPPF.
The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning 3 (Historic England, 2017a)	Provides guidance on establishing the setting of a heritage asset, how that setting contributes to the asset's significance, and to what extent a proposed development might impact upon an asset's significance.
Standard and guidance for historic environment desk-based assessment (clfA, 2020)	Provides guidance for the compilation and assessment of baseline historic environment data. It includes guidance on what should and should not be included in a DBA.
Code of Conduct (ClfA, 2014)	Promotes the standards of conduct and self-discipline required of a member in the interests of the public and in pursuit of the study and care of the physical evidence of the human past.
Principles of Cultural Heritage Impact Assessment in the UK (IEMA, IHBC and ClfA, 2021)	Authoritative set of principles that promotes good practice in cultural heritage impact assessment.
Commercial Renewable Energy Development and the Historic Environment (Historic England, 2021)	Describes the potential impacts on the historic environment of commercial renewable energy proposals, including NSIPs. It is written for all of those involved in commercial renewable energy development, helping them to give appropriate consideration to heritage issues.

25.4.2 Data sources

25.4.2.1 Site specific

33. In order to provide site specific and up to date information on which to base the impact assessment, a historic environment walkover survey and geoarchaeological desk based assessment were undertaken. An archaeological geophysical survey is currently underway.
34. The historic environment walkover survey was undertaken to confirm the presence/absence of heritage assets identified on the Essex Historic Environment Record (EHER) and through desk based review of aerial imagery and historic maps, to assess their preservation, extent and setting, and to identify any previously unrecorded heritage assets. A total of 31 locations containing known heritage assets were visited between 5th and 6th October 2022, the results from which are presented within Appendix 25.1 (Volume III).

35. The aims of the historic environment walkover survey were to:
- Assess the condition of upstanding/above ground archaeological remains within identified sites (i.e., earthworks or structures);
 - Identify any currently unrecorded heritage assets (i.e., earthworks or structures);
 - Establish the potential for currently unknown heritage assets (e.g., buried archaeology) to be present within the onshore project area;
 - Assess the potential impact from other modern developments within the study areas which may have reduced the significance/preservation of known heritage assets; and
 - Undertake initial setting assessment site visits of and in the vicinity of identified designated heritage assets.
36. The aim of the archaeological geophysical survey was to locate, record and characterise any surviving sub-surface archaeological remains that would enhance current understanding of the archaeological resource at targeted locations within the onshore project area. The targeted geophysical survey has been termed as a priority (phase1) survey, which has been followed by a second phase of archaeological geophysical survey to cover as much of the onshore project boundary as possible.
37. A total of 33 areas, covering approximately 519.89ha, were identified as requiring a priority (phase 1) archaeological geophysical survey. These areas were targeted based on known locations of recorded heritage assets relating to buried archaeology within the Essex Historic Environment Record (HER) and as identified from aerial photographic data.
38. The priority (phase 1) archaeological geophysical survey is currently underway. At the time of writing (November 2022), 24 survey areas were complete or partially complete (due to crop constraints), covering approximately 300ha, a summary of which is summarised in Section 25.5.4. The outstanding survey results from the phase 1 and phase 2 surveys will be presented in the ES chapter.

25.4.2.2 Other available sources

39. Other sources that have been used to inform the assessment are listed in Table 25.6.

Table 25.6 Other available data and information sources

Data set	Spatial coverage	Notes
National Heritage List for England (NHLE)	England	Official, up to date, register of all nationally protected historic buildings and sites in England - listed buildings, scheduled monuments, registered parks and gardens, and battlefields.
Essex Historic Environment Record (HER)	Essex County	HERs are information services that provide access to comprehensive and dynamic resources relating to the archaeology and historic built environment of a defined geographic area. HERs contain details on local archaeological sites and finds, historic buildings and historic landscapes and are regularly updated.
Conservation Areas	Essex County	Essex County Council holds information on Conservation Areas including locally listed buildings.
Relevant Regional, Local and Period Archaeological Studies and Journals	UK	Historic and archaeological data consulted to inform the wider baseline context. The studies / journals consulted do not constitute an exhaustive account of all historical / archaeological data identified within the study area.

Data set	Spatial coverage	Notes
The Archaeology Data Service	UK	A non-exhaustive directory of archaeological research consulted to inform the wider baseline context and previous archaeological investigations in the study area.
Cartographic sources (the EHER, Essex County Council Record Office, Essex National Mapping Programme and Envirocheck Report)	Essex County	Historic mapping for the study area including 19 th century Enclosure and Tithe maps, and 1 st , 2 nd and later edition Ordnance Survey maps. Some cartographic data is fragmentary for the study area. This chapter integrates the results of the Map Regression analysis undertaken by Air Photo Services Limited (APS). The full report is included in Appendix 25.1 and Appendix 25.2 (Volume III).
Aerial Photographic Data (Historic England Archive and the EHER, and ortho-rectified mosaics of vertical aerial photographs at Google Earth)	Essex County	Aerial photographic data for the study area. This chapter integrates the results of the Aerial Photographic assessment undertaken by APS. The full report is included in Appendix 25.1 and Appendix 25.2 (Volume III).
Light Detection and Ranging (LiDAR) survey data	Essex County	Available LiDAR data for the study area. This chapter integrates the results of the LiDAR assessment undertaken by APS. The full report is included in Appendix 25.1 and Appendix 25.2 (Volume III).
British Geological Survey (BGS) data (surface geology)	UK	Historic borehole logs and wider geological background for the study area.
Zone of Theoretical Visibility (ZTV)	Study Area	ZTVs for the permanent above ground infrastructure required by North Falls to inform the setting assessments – details of the ZTVs are provided in Chapter 30 Landscape and Visual Impact Assessment and Chapter 29 Seascape, Landscape and Visual Impact Assessment (Volume I).

25.4.3 Impact assessment methodology

40. 3. Chapter 6 EIA Methodology (Volume I) explains the general impact assessment methodology applied to North Falls. The following sections describe the methods used to assess the likely significant effects on onshore archaeology and cultural heritage.
41. The impact assessment methodology adopted for onshore archaeology and cultural heritage will define heritage assets and their settings likely to be impacted by the Project and will assess the level of any resulting benefit, harm or loss to their significance. The assessment is not limited to direct (physical) impacts, but also assesses possible indirect (physical) impacts upon heritage assets which may arise as a result of changes to hydrological processes and changes to the setting of heritage assets, whether visually, or in the form of noise, dust and vibration, spatial associations and a consideration of historic relationships between places which may impact their significance.
42. As set out in Principles of Cultural Heritage Impact Assessment in the UK (IEMA, IHBC and ClfA, 2021), Cultural Heritage Impact Assessment (CHIA) is concerned with “*understanding the consequences of change to cultural significance*”. The principles of assessment are:
 - A. Understanding cultural heritage assets; and

B. Evaluating the consequences of change.

43. Understanding cultural heritage assets distinguishes between:
- Describing the asset (what it is and what is known about it);
 - Ascribing cultural significance (a description of what is valued about it); and
 - Attributing importance (a scaled measure of the degree to which the cultural significance of that asset should be protected).
44. Evaluating the consequences of change also distinguishes between three separate analytical stages:
- Understanding change (a factual statement of how a proposal would change a cultural heritage asset or its setting, including how it is experienced);
 - Assessing impact (a scaled measure of the degree to which any change would impact on cultural significance); and
 - Weighting the effect (the measure that brings together the magnitude of the impact and the cultural heritage asset's importance).
45. The relationship between these principles and the general approach to EIA Chapter 6 EIA Methodology (Volume I) is described below.

25.4.3.1 *Understanding cultural heritage assets*

46. A description of the assets, and their cultural significance, relevant to the assessment of onshore archaeology and cultural heritage is provided in Section 25.5. At this initial stage of the Project, many of these assets are not yet fully understood. However, as set out in the Principles, as well as in national planning guidance including the NPSs (see Table 25.4) and NPPF (see Section 25.4.1.2 above), proportionality is key and applicants must provide a level of detail that is proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. The level of detail provided in Section 25.5, therefore, sufficiently characterises these assets so that potential impacts upon their significance can be understood for the purposes of EIA.
47. Further investigation and data gathering would be progressed post-consent, including any outstanding geophysical surveys and trial trenching, alongside additional mitigation requirements as set out in the Outline WSI (Onshore) to be submitted alongside the DCO application. This is in line with the Principles (IEMA, IHBC and ClfA, 2021) which describe how, "*an understanding of the cultural heritage asset is likely to be an iterative process which regularly reappraises the consequential impact on cultural significance as a proposal evolves or as more evidence emerges from research and investigations*". Section 25.5, therefore, also highlights where there is a need to acquire additional information, and when this would be progressed, as part of an ongoing iterative design process.
48. As defined in the NPPF (MHCLG, 2021, Annex 2) cultural (or heritage) significance is the sum of the heritage values or interests that we, as a society, recognise in a heritage asset and seek to protect or enhance for future generations. A statement of significance should explain why we value a heritage asset. Understanding the

significance of an asset should not be confused with a description of that asset which does not articulate 'what matters and why'. Historic England's 'Conservation Principles' (Historic England, 2017c) defines the term significance as encompassed by four headings: archaeological interest, architectural interest, artistic interest and historic interest. These terms are used in articulating the cultural significance of heritage assets for the purposes of this impact assessment.

49. As defined in the Principles (IEMA, IHBC and ClfA, 2021), cultural significance does not have a scale associated with it and it is therefore not appropriate to refer to 'high' or 'low' significance. This scaling is addressed through the separate consideration of a heritage asset's importance. Cultural significance is not directly related to designation status, nor is it defined in law. However, the reasons for designation may articulate aspects of heritage significance.
50. In describing the cultural significance of heritage assets, reference will also be made to the contribution of setting to that significance. The setting of a heritage asset is described as the surroundings in which a heritage asset is experienced (Historic England, 2017a). Elements of an asset's setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.
51. The importance of a heritage asset is a measure of the degree to which we seek to protect and preserve the cultural significance of that asset through, for example, legislation and planning policy. Determining the importance of an asset is a key decision in impact assessment as it will affect judgements regarding the relative weight to be given to protecting different assets during the design of a proposal.
52. Importance is scaled (unlike cultural significance) and requires the assessor to make a judgement regarding the merits of different heritage assets. It is therefore appropriate to refer to 'high' or 'low' importance for example. The statutory designation of heritage assets provides examples of how assets can be assigned a level of importance against explicit criteria. Some designated assets are judged to be of national importance, for example Scheduled Monuments, and World Heritage Sites are, again by definition, sites of international importance.
53. In determining the significance of effect for the purposes of EIA, this last analytical stage (attributing importance) broadly equates to 'sensitivity' as described in Section 25.4.3.3 below.

25.4.3.2 *Evaluating the consequences of change*

54. The Principles (IEMA, IHBC and ClfA, 2021) describe change as, "both the act and the result of making something different from how it was before, whether directly or indirectly, temporarily or permanently, reversibly or irreversibly". It is also important to note that change may or may not lead to an impact on cultural significance. Before a scaled measure of this change can be determined it is necessary to describe the potential change to a heritage asset or its setting. To this end, a narrative approach describing the nature of potential changes is provided for each impact assessed in Section 25.7.

55. This is followed by the determination of a scaled measure of the degree to which any change would impact cultural significance, which broadly equates to the 'magnitude of impact' as described in Section 25.4.3.3 below. This change could have a positive (beneficial) or negative (adverse) outcome. It is not a measure of the reach or extent of the proposal but rather the change to 'what matters' about a heritage asset.
56. The final stage is weighting the effect (the measure that brings together the magnitude of the impact and the cultural heritage asset's importance). For the Project, this is articulated through the significance of effect matrix presented in Table 25.9. Following on from the previous stages of the assessment, which draw out the narrative regarding the importance of a cultural heritage asset, its cultural significance, and how the proposal will impact this significance, this measure is indicative of the weight that should be given to the matter in influencing the design of the proposal or, ultimately, in influencing whether the proposal would be acceptable and permitted.
57. Definitions for this weighted measure of significance of effect (in EIA terms) are provided in Table 25.10.

25.4.3.3 *Definitions of sensitivity and magnitude*

58. The sensitivity of a receptor is a function of its capacity to accommodate change and reflects its ability to recover if it is affected. However, while impacts to a heritage asset's setting or character can be temporary, impacts which result in damage or destruction of the assets themselves, or their relationship with their wider environment and context, are permanent. Once destroyed an asset cannot recover. On this basis, the assessment of the significance of effect of any identified impact is largely a product of the importance of an asset (rather than its sensitivity) and the degree to which any change would impact on cultural significance.
59. For the purposes of this EIA, the criteria for determining the heritage importance of any relevant heritage assets are described in Table 25.7.
60. The categories and definitions of heritage importance do not necessarily reflect a definitive level of importance of an asset. They are intended to provide a provisional guide to the assessment of perceived heritage importance, which is to be based upon professional judgement incorporating the evidential, archaeological, historical, aesthetic, architectural and communal heritage values of the asset or assets. It is important to note that the importance and cultural significance of an asset can be amended or revised as more information comes to light (i.e., as part of further investigations planned post-consent).
61. Table 25.7 includes heritage assets of uncertain heritage importance i.e., where the importance, existence and/or level of survival of an asset has not been ascertained (or fully understood) from available evidence. Although Table 25.7 provides a definition for assets of an uncertain heritage importance, where uncertainty occurs, the precautionary approach is to assign the highest likely level of importance. This precautionary approach represents good practice in cultural heritage impact assessment and reduces the potential for impacts to be under-estimated.

Table 25.7 Criteria for determining heritage importance

Importance	Definition
High (perceived international/national importance)	<ul style="list-style-type: none"> • World Heritage Sites • Scheduled Monuments • Grade I and II* Listed Buildings or structures • Protected wrecks • Designated historic landscapes of outstanding interest • Conservation Areas containing buildings or structures with high heritage importance, or high concentrations of listed buildings • Assets of acknowledged international/national importance • Assets that can contribute significantly to acknowledged international/national research objectives
Medium (perceived regional importance)	<ul style="list-style-type: none"> • Grade II Listed Buildings or structures • Designated special historic landscapes • Other types and character of Conservation Areas • Assets that contribute to regional research objectives • Assets with regional value, educational interest or cultural appreciation
Low (perceived local importance)	<ul style="list-style-type: none"> • 'Locally Listed' buildings or structures • Assets that contribute to local research objectives • Assets with local value, educational interest or cultural appreciation • Assets compromised by poor preservation and/or poor contextual associations
Negligible	<ul style="list-style-type: none"> • Assets with no significant value or archaeological/historical interest
Uncertain/Unknown	<ul style="list-style-type: none"> • The importance/existence/level of survival of the asset has not been ascertained (or fully ascertained/understood) from available evidence

62. Magnitude broadly equates as the degree to which cultural significance is positively or negatively changed by the proposal.
63. Direct physical impacts, indirect physical impacts and impacts from a change in setting on the significance of heritage assets are considered relevant. Impacts may be adverse or beneficial. Depending on the nature of the impact and the duration of development, impacts can also be temporary and/or reversible or permanent and/or irreversible.
64. The finite nature of archaeological remains means that physical impacts are almost always permanent and irreversible as the 'fabric' of the asset and, hence, its potential to inform our historical understanding, would be removed. By contrast, impacts resulting from the change in the setting of heritage assets will depend upon the longevity of construction and operation of the Project and the sensitivity with which the landscape/seascape is re-instated subsequent to decommissioning/demolition, if applicable
65. The magnitude of adverse impact with respect to onshore archaeology and cultural heritage directly relates to the extent of harm to, or loss of, key elements of the asset's cultural significance, which may include its setting.
66. The magnitude of beneficial impact with respect to onshore archaeology and cultural heritage directly relates to the level of public benefit associated with an individual impact. Benefits may correspond directly to the project itself where a project will enhance the historic environment (e.g., through measures which will improve the setting of a heritage asset or public access to it).

67. Alternatively, benefits may occur on the basis of data gathering exercises undertaken for the purpose of a project which will enhance public understanding by adding to the archaeological record (e.g., through the accumulation of publicly available information and data). The measure of beneficial impact (high/medium/low) is, therefore, necessarily situational and specific to a given site, area or subject. One such example of a positive magnitude of impact could be relevant to, for example, new survey data being acquired, which will ultimately be made publicly accessible.
68. The criteria used for assessing the magnitude of impact with regard to onshore archaeology and cultural heritage are presented in Table 25.8.

Table 25.8 Definition of magnitude of impact to heritage assets

Magnitude	Definition
High Adverse	Key elements of the asset's fabric and/or setting are lost or fundamentally altered, such that the asset's cultural significance is lost or severely compromised.
Medium Adverse	Elements of the asset's fabric and/or setting which contribute to its significance are affected, but to a more limited extent, resulting in an appreciable but partial loss of the asset's cultural significance.
Low Adverse	Elements of the asset's fabric and/or setting which contribute to its cultural significance are affected, resulting in a slight loss of cultural significance.
Negligible	The asset's fabric and/or setting is changed in ways which do not materially affect its cultural significance.
Low Beneficial	Elements of the asset's physical fabric which would otherwise be lost, leading to a slight loss of cultural significance, are preserved <i>in situ</i> ; or Elements of the asset's setting are improved, slightly enhancing its cultural significance; or Research and recording leads to a slight enhancement to the archaeological or historical interest of the asset. This only applies in situations where the asset would not be otherwise harmed i.e., it is not recording in advance of loss.
Medium Beneficial	Elements of the asset's physical fabric which would otherwise be lost, leading to an appreciable but partial loss of cultural significance, are preserved <i>in situ</i> ; or Elements of the asset's setting are considerably improved, appreciably enhancing its cultural significance; or Research and recording leads to a considerable enhancement to the archaeological or historical interest of the asset. This only applies in situations where the asset would not be otherwise harmed i.e., it is not recording in advance of loss.
High Beneficial	Elements of the asset's physical fabric which would otherwise be lost, severely compromising its cultural significance, are preserved <i>in situ</i> ; or Elements of the asset's setting, which were previously lost or unintelligible, are restored, greatly enhancing its cultural significance.
No impact	No change to the assets fabric or setting which affects its cultural significance.

25.4.3.4 Significance of effect

69. In basic terms, the potential significance of effect is a function of the sensitivity of the receptor and the magnitude of the impact (see Chapter 6 EIA Methodology (Volume I) for further details). As described above, for onshore archaeology and cultural heritage this equates to the importance of a heritage asset weighed against the magnitude of change to its cultural significance. The determination of significance is guided by the use of a significance of effect matrix, as shown in Table 25.9. Definitions of each level of significance are provided in Table 25.10.

70. Effects identified within the assessment as major or moderate are regarded within this chapter as likely significant effects. Appropriate mitigation has been identified, where practicable, in consultation with the regulatory authorities and relevant stakeholders. The aim of mitigation measures is to avoid or reduce the overall significance of effect in order to determine a residual effect upon a given receptor.

Table 25.9 Significance of effect matrix

		Adverse magnitude				Beneficial magnitude			
		High	Medium	Low	Negligible	Negligible	Low	Medium	High
Sensitivity	High	Major	Major	Moderate	Minor	Minor	Moderate	Major	Major
	Medium	Major	Moderate	Minor	Minor	Minor	Minor	Moderate	Major
	Low	Moderate	Minor	Negligible	Negligible	Negligible	Minor	Minor	Moderate
	Negligible	Minor	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Minor

Table 25.10 Definition of significance of effect

Significance	Definition
Major	Change in cultural significance, both adverse or beneficial, which are likely to be important considerations at a national or regional level because they contribute to achieving national or regional objectives. Effective/acceptable mitigation options may still be possible, to offset and/or reduce residual impacts to satisfactory levels.
Moderate	Change in cultural significance, both adverse or beneficial, which are likely to be important considerations at a local level. Effective/acceptable mitigation options may still be possible, to offset and/or reduce residual impacts to satisfactory levels.
Minor	Change in cultural significance, both adverse or beneficial, which may be raised as local issues but are unlikely to be material considerations in the decision-making process. Industry standard mitigation measures may still apply.
Negligible	No material change to cultural significance.
No change	No impact, therefore, no change to cultural significance.

25.4.4 Historic Landscape Character

71. The approach to the assessment of Historic Landscape Character (HLC) differs to that outlined above for heritage assets.
72. The historic character of the landscape is described in terms of ability to accommodate change. For this reason, an approach is required which recognises the dynamic nature of landscape and how all aspects of the landscape, no matter how modern or fragmentary, can form part of the character of that landscape.
73. It is not meaningful, therefore, to assign a level of importance to these aspects of landscape character. Individual elements which contribute towards the HLC of an area (e.g. hedgerows, field boundaries) may, however, be assigned a heritage importance based on the criteria outlined in Table 25.7 (where relevant).
74. As the HLC is described in terms of ability to accommodate change, it is also not meaningful to assign a measure of magnitude in order to understand the nature of

the potential changes. Rather, this change is expressed as a narrative description of the landscape character and how it might be affected by North Falls.

75. With regard to the HLC, in terms of assessing the effect, it is the alteration arising as a result of North Falls to the baseline HLC as assessed in this chapter (see Sections 25.5.8 and 25.5.10 and Appendices 25.1 and 25.3, Volume III) that is the key focus. In the absence of attributing heritage importance, effects upon the HLC cannot be assessed using the significance matrix presented in Table 25.9 but are rather expressed in terms of the ability of the HLC to accommodate any change arising as a result of a project. In this respect, while damage to, or destruction of, a heritage asset is considered permanent and irreversible, effects to HLC are dynamic and may be temporary and reversible. Certain elements/features that may be considered to contribute to the HLC of an area (e.g. hedgerows, field/parish boundaries) may nonetheless be considered in relation to the process outlined above, as and where relevant.

25.4.5 Cumulative Effects Assessment methodology

76. The Cumulative Effects Assessment (CEA) considers other plans, projects and activities that may result in cumulative effects with North Falls. Chapter 6 EIA Methodology (Volume I) provides further details of the general framework and approach to the CEA.
77. For onshore archaeology and cultural heritage, cumulative effects may occur where developments acting in combination can have a cumulative effect on an archaeological resource which overlaps or intersects more than one development as well as affecting the nature of the wider archaeological landscape. In combination effects of a development's construction and/or operation phases could result in a cumulative effect through a change in heritage setting to both designated and non-designated heritage assets.

25.4.6 Transboundary effects assessment methodology

78. There are no transboundary effects anticipated as a result of North Falls with respect to onshore archaeology and cultural heritage.

25.4.7 Assumptions and limitations

79. Data used to compile this PEIR chapter primarily consist of secondary information derived from a variety of sources. The assumption is made that the secondary data, as well as those derived from other secondary sources, are reasonably accurate.
80. The records held by the sources used in this assessment are not a record of all surviving heritage assets, rather a record of the discovery of a range of archaeological and historical components of the historic environment for the study areas. The information held within these sources is not complete and does not preclude the subsequent discovery of further elements of the historic environment that are, at present, unknown.
81. At this stage, the archaeological geophysical surveys and heritage setting assessment are ongoing and are reported only in part in this chapter. The full details

of the findings from these ongoing surveys and assessments will be presented within the ES chapter submitted as part of the final DCO application.

25.5 Existing environment

25.5.1 Introduction

82. The following section provides a summary of the known and potential onshore archaeological and cultural heritage resource within the defined study areas.
83. The baseline environment as presented below has been, to date, informed by the baseline data and information gathering exercise and assessment undertaken as part of the Cable Landfall ADBA (Appendix 25.1, Volume III), the Cable and Substation ADBA (Appendix 25.2, Volume III), both of which include the Aerial Photographic, LiDAR and Map Regression Analysis (Annex 25.1.1 and 25.2.1). Site visits have been undertaken to inform the initial heritage setting assessment exercise and establish the condition of extant historic earthworks and structures (Appendix 25.3, Appendix 25.4 and Appendix 25.5, Volume III). In addition, a Geoarchaeological DBA (Appendix 25.6, Volume III), including details from monitoring of ground investigations works at the landfall (Appendix 25.9, Volume III), and the results of the Geophysical Survey of available areas of the onshore project area (Appendix 25.8, Volume III) also inform this baseline section.
84. The archaeological periods referred to in this chapter are broadly defined by the following date ranges:
 - Palaeolithic: 960,000 BC – 8,500 BC;
 - Mesolithic: 8,500 – 4,000 BC;
 - Neolithic: 4,000 – 2,200 BC;
 - Bronze Age: 2,200 – 700 BC;
 - Iron Age: 700 BC – AD 43;
 - Romano-British: AD 43 – 410;
 - Early medieval (Saxon): AD 410 – 1066;
 - Medieval: AD 1066 – 1499;
 - Post-medieval: AD 1500 – 1799;
 - 19th Century: AD 1800 – 1899; and
 - Modern: AD 1900 – present day.

25.5.2 Designated heritage assets

85. There are 481 designated heritage assets within the study area, comprising:
 - Seven Scheduled Monuments;
 - Two Registered Parks and Gardens;
 - 464 Listed Buildings; and
 - Eight Conservation Areas.

86. Details of the designated assets within the designated heritage assets study area, are presented in a gazetteer (Appendix 25.7 (Volume III) and on Figures 25.1a-i, Volume II).
87. At present, one designated heritage asset is partly located within the onshore project area: Frinton Conservation Area. The northern extent of the landfall search area currently extends into the very southern edge of the Conservation Area.
88. Within the Conservation Area Appraisal, Frinton is described alongside its neighbouring Conservation Area, Walton, as occupying approximately 5km of coastline south westwards from the Naze, a natural headland dividing Hamford Water from the North Sea. Frinton-on-Sea (Frinton) and Walton-on-the-Naze (Walton) are both coastal towns being medieval in origin, however, both developed in the mid to late 19th century as seaside resorts. The two towns are individual in their historical development and subsequent character (Place Services, 2022). Frinton as a planned resort dates from the end of the 19th century, with its heyday some 30 years later. It contains many fine examples of English domestic architecture of the period, set in a spacious residential suburb, and linked to a famous main street and an important open space on the sea front. The extensive Conservation Area includes these important locations and much of their general setting.
89. There are no other designated heritage assets located within the onshore project area.

25.5.2.1 *Heritage Importance*

90. Based on the criteria shown in Table 25.7, the designated heritage assets outlined in Section 25.5.2 (and Appendix 25.3 and Appendix 25.4, Volume III) are considered to be assets of medium or high heritage importance with perceived regional or national importance.

25.5.3 Non-designated heritage assets

91. The details of the historic baseline of the Project have been summarised below from the Cable Landfall ADBA (Appendix 25.1, Volume III) and the Cable and Substation ADBA (Appendix 25.2, Volume III).
92. All HER data has been compiled into a gazetteer (see Appendix 25.7 (Volume III) and Figures 25.2a-j (Volume II)) and the sub-sections below identify the known remains most relevant to the study area with additional information provided where available from archaeological reports, HER event record data, data held on the ADS and results from The Tendring District Historic Environment Characterisation Project (Tendring District Council and Essex County Council 2008) and the National Mapping Programme Essex: Management Report (Essex County Council and EH 2003).
93. There are 305 non-designated heritage assets within the non-designated heritage assets study area (Appendix 25.1, Appendix 25.2, and Appendix 25.7 (Volume III)), of which 96 fall within the onshore project area. 31 of those located within the onshore project area are findspots or finds recorded by the Portable Antiquities Scheme (PAS).
94. Non-designated heritage assets potentially subject to direct physical impacts are confined to the onshore project area and may comprise potential subsurface archaeological remains and above ground heritage assets (e.g., earthworks or structures).

95. Non-designated heritage assets which may be subject to indirect physical or non-physical impacts (associated with change in setting) as a result of North Falls may be either within or beyond the parameters of the onshore project area.
96. Unless specified otherwise the references in brackets in the following sections relate to a unique reference number assigned to the asset from the HER, as found in Appendix 25.7 (Volume III) and Figures 25.2a-j (Volume II).

25.5.3.1 *Palaeolithic*

97. Within the study area the Palaeolithic evidence can generally be characterised by flint tools (53850, 1917, 1919), some of which are broadly dated to the Palaeolithic to Bronze Age.
98. Some of the HER records include sites where archaeological features and finds recovered have been dated between the Palaeolithic and later periods. A field north of Carrington's Farm (2457) containing cropmarks dating from at least the prehistoric period underwent trial trenching in 2011 (30 trenches) (Figures 25.2i-j, Volume II). The cropmarks comprised a small sub-rectangular enclosure (possibly prehistoric). Three pits were excavated and produced prehistoric pottery and flints. One pot sherd was Late Iron Age in date and two other sherds were more tentatively assigned the same date. A further 21 features were identified and comprised field ditches (mostly undated) which share a southwest-northeast alignment in line with the present-day field boundaries, these were also undated but presumed to be Post-medieval.
99. Other cropmark features within the wider area have been broadly dated to the prehistoric to Roman periods, though sometimes these are described as being masked in part by underlying geological conditions. Similarly, a series of cropmarks west of Horsleycross Street (3127) are masked in part by underlying geological conditions and have been broadly dated to the Palaeolithic to Post-medieval periods (Figures 25.2i-j, Volume II). Of these cropmarks, the sub-rectangular enclosure was presumed to be prehistoric in origin and the remainder of features included pits, trackways and field boundaries dating from the prehistoric to the Post-medieval periods.

25.5.3.2 *Mesolithic*

100. In the wider area, evidence from the Mesolithic period can largely be characterised by significant assemblages of microlith stone tools, particularly around the coast at Walton-on-the-Naze, which attest to the presence of transient groups relying on wild game and fishing for subsistence. Within the study area, records of Mesolithic finds include one tranchet axe (1918), Adze (53618), and a flint tool (53625). In the wider area, other tranchet axes, maceheads and a perforated stone objects have also been found.
101. The sea levels began to rise during this period due to glacial melt and by the Mesolithic period there was probably a tidal estuary (48658, Figures 25.2.a-d, Volume II) within the cable landfall search area, which occupied the area of low, flat, marshy land in the vicinity of the current Holland Brook (former Holland River). The estuary was known as the Gunfleet estuary from the Medieval period onwards. The estuary extended broadly along the line of the Holland Brook and surrounding marshlands and narrowed as it stretched northwest inland. It probably extended well beyond the present location of Fan Bridge on the road between Great Holland Common and Cook's Green (Little Clacton) and may have been tidal as far as Weeley and navigable to smaller boats up to Thorpe-le-Soken further north.

25.5.3.3 *Neolithic*

102. Neolithic activity is well attested across the wider Tendring District and is evidenced by cropmarks of a monumental causewayed enclosure at St Osyth and ring ditch at Brightlingsea, which together have yielded one of the largest collections of early Neolithic ceramics of the East of England. Evidence suggests that during this period the population begins to move to a more settled agricultural existence.
103. Within the study area, Neolithic evidence comprises two findspots of axe heads: one at Great Hall Farm (2812) and another at Great Holland (2814) towards the landfall. Both are characteristic of this period, indicating at least, a presence in the area during this period.
104. Over 1km north of the study area near Lawford, a scheduled Neolithic settlement site (NHLE List Entry 1002157) initially identified as a cropmark and has since been variously excavated. Earthworks and a domestic structure have been identified, along with finds such as Neolithic pottery, flint tools, bone pins and animal bones (Figure 25.1h, Volume II).
105. A Neolithic beaker burial was also recorded and scheduled (NHLE List Entry 1002146) near Ardleigh, approximately 1km outside the study area (Figure 25.1g, Volume II). The burial was found in a rectangular pit, with no other grave goods.

25.5.3.4 *Bronze Age*

106. Evidence for the Bronze Age in the wider Tendring area can be characterised by Beaker pottery, barrows and cremation cemeteries. A locally distinctive form of pottery and funerary tradition has been recovered from cremation cemeteries at Ardleigh, Brightlingsea, Lodge Farm and Little Bromley (all outside the study area), with cremations being placed between barrows in large straight sided elaborately decorated Bucket Urns (evident as ring ditches). Bronze Age burials have also been found eroding from modern cliff faces north of Walton, which would have still been a distance from the coastline during the Bronze Age.
107. A concentration of potential Bronze Age features has been identified around Carrington's Farm at the north of the study area. Two possible ring ditches both measuring 11m in diameter (17485 and 2640). The latter ring ditch (2640) is situated within a complex series of undated cropmarks (likely field boundaries, pit and trackway) (Figure 25.2j, Volume II).
108. Two Middle Bronze Age hoards (51070 to the north and 51086 near Beaumont-cum-Moze) and three axe heads (51077 near Horsley Cross; 51089, 6560; both near Great Holland) have also been found within the study area. Near to the landfall area, other findspots within Great Holland demonstrate Bronze Age activity and include a vessel (51130) and a mace head (3362).
109. A number of possible ring ditches (possible Bronze Age barrows) have been identified at Great Holland (2975). The HER records them as undated, as they have not been excavated and sit within a landscape that contains various cropmarks, some of which are attributable to underlying geological conditions. However, the ring ditch cropmarks are usually a fair indication of underlying Bronze Age barrows and given the nature of the findspots at Great Holland, their presence is likely.

25.5.3.5 *Iron Age*

110. Evidence for Iron Age activity in the wider area is characterised by dispersed domestic and agricultural settlements, field systems, cremation burials and red hills

(salt production). Evidence from sites such as St Osyth (over 5km to the west of the study area) suggest arable and pastoral farming were practiced, with the lower lying salt marshes being used for grazing. Wool production likely also formed part of the local economy, which was probably heavily influenced by the Trinovantes tribe, whose capital was located in the nearby nationally significant Iron Age settlement of Camulodunum (near modern Colchester over 16km to the north-west).

111. A comprehensive account of Essex red hills is given in *The Red Hills of Essex: Salt-making in antiquity* published by Colchester Archaeological Group. Two red hills are recorded within the study area at Beaumont Quay (3016 and 3017) along with sherds of Iron age and Roman pottery found on the mound (Figure 25.2e, Volume II). There is also another red hill recorded on the HER (2915, Figure 25.2a, Volume II) in the intertidal zone within the landfall search area, however there is no further information or details on the HER and there was no evidence of a red hill identified during the heritage walkover survey (Appendix 25.5, Volume III).
112. The majority of recorded Iron Age evidence within the study area are finds of coins (56322, 56331, 56374, 56375, 51854, 51858, 56325, 56332, 56387 and 51855), brooches (56322, 56375, 51861, 51862, and 56330) and other jewellery (56375). There is a particular concentration to the south of Little Bentley, which is a common theme across the periods. This could be due to it being an area used for metal detecting, where finds have been properly recorded through the PAS and subsequently the HER. However, there is a very notable concentration from the Iron Age through to the Post-medieval, suggesting this could be an area of particular sensitivity, consistent with multiperiod settlement and/or activity.
113. Within the wider area, towards the landfall end of the study area, recorded Iron Age evidence comes in the form of an Iron Age ditch (containing daub, prehistoric pottery and slag) and a residual loom weight; the latter found in the context of a Medieval structure. The features were identified during an archaeological watching brief and excavation near Cook's Green during the EDF Energy Networks cable route groundwork in Little Clacton. It was noted that the Iron Age ditch had already been identified on the NMP and was in line with modern field boundaries, suggesting that there is some potential for undated cropmarks and some modern field boundaries to have origins in the Iron Age.
114. There are various HER records broadly dated to the prehistoric period. They mainly comprise worked flints (2469) and arrowheads (3071). Various findspots of pottery (17745) and a red carnelian bead have also been recorded (2357) as prehistoric.
115. In the wider area, there are various concentrations of cropmarks including curvilinear enclosures, trackways and field boundaries have also been broadly recorded as prehistoric in date. Several HER records in the wider area note that several enclosures show signs of irregular morphology and have been broadly dated to the prehistoric.

25.5.3.6 *Romano-British*

116. Evidence from the Romano-British period in the wider area suggests a dispersed settlement pattern during this period, with an associated agricultural landscape with localised industries. Various Roman roads are recorded within the study area, with a particular concentration at the northern extent of the study area, which is reflective of the influence of the Roman town at Colchester. Sections of the Roman road connecting Colchester to Manningtree cross this area (2573, Figure 25.2j, Volume II)

and have been identified partly by aerial photography and extant roads with probable Roman (or earlier) origins, such as Bromley Road. Two other Roman roads are recorded in this area north of Little Bromley (3168/3128, Figures 25.2i-j, Volume II). There are two records of undated cropmarks (17110/2444) within the vicinity of these roads, both of which also include possible sections of Roman road (2631) (Figure 25.2j, Volume II).

117. Evidence of likely roadside settlement is recorded around Grange Road where roads 2573 and 3168 intersect (Figure 25.2j, Volume II). Record 17110 represents a very high concentration of cropmark features indicative of settlement including a double-ditched rectangular enclosure with entrances, a curvilinear enclosure, the roads themselves and various linear features.
118. There are two other possible Roman roads recorded on the HER, though more are likely present within the study area. One is located south of Wolves Hall (3138) and the other (3073) is at the south of the study area between Tendring and Beaumont Quay.
119. Record 17486 appears to be a continuation of field boundaries eastwards along road 3168, as well as a section of road 3168 itself (Figure 25.2j, Volume II).
120. The remaining Roman HER records within the study area are findspots, primarily of coins, brooches and pottery. There are notable concentrations around Little Bromley (56327, 56333, 56339, 2316 and 2468), Beaumont-cum-Moze (56367, 56370, 56373 and 3077) and Beaumont Quay (7409 and 3017). The latter is probably associated with the supposed Roman road (3073). Two other finds are recorded at the southern extent of the study area and include a tile (3122) and coin (57299).

25.5.3.7 *Early Medieval*

121. Evidence from the Saxon period is generally sparse in the wider area, suggesting either continued occupation or reoccupation of previously abandoned villas and farmsteads, such as those at St Osyth. The name of which derives from the dedication of a minster church to Osyth, daughter of a Saxon King. Evidence for Middle Saxon domestic settlement and activity has been recovered from the Clacton area. Later Viking evidence is rare in Essex as a whole, but place name evidence at Kirkby-le-Soken and Thorpe-le-Soken near the south of the study area, are Danish in origin suggesting at least a general presence in the area.
122. The majority of early medieval HER records within the study area are findspots and include items such as horse tack (51331 and 51332), coins (51330 and 51163), pottery (7410, 7411 and 17746), a sword (51324) and a brooch (52899). The finds are fairly widely distributed across the study area with a loose concentration between Great Bromley and Little Bromley.
123. Features indicative of early medieval agricultural and industrial activity include various cropmarks of field boundaries and other features:
 - Record 3162 comprises cropmarks of linear features, including a short stretch of double-ditched trackway and an extraction pit. The adjacent Ancient Woodland is notably called Gravel Wood and to the north Post-medieval gravel extraction is also evident from historic mapping;
 - Record 47285 comprises cropmarks of former field boundaries marked on 1st edition OS mapping just north of Thorpe Cross; and

- Record 3089, just north of Tendring Heath, is a ditch with associated field boundaries.

25.5.3.8 *Medieval*

124. Settlement patterns and activities in the wider area remained dispersed during the Medieval period, with villages (centred around churches and greens), hamlets, hall complexes and farmsteads providing settlement foci in an otherwise rural and agricultural landscape. Moated sites are a common small-scale settlement type in Essex, but less so in Tendring. The nearest Medieval moated hall is recorded at Gutteridge Hall in Weeley, over 3km to the west of the study area. A possible moat was recorded within the study area amongst other undated cropmarks (17241) east of Hannan Hall (Figure 25.2f, Volume II).
125. Various cropmarks of possible medieval field boundaries (48329, 46798, 46801 and 46799) are recorded across the study area and are generally concentrated around Thorpe-le-Soken and Great Holland (3627, 16985, and 2983). These possible field boundaries are indicative of the agricultural activity that would have centred on settlements such as these.
126. Central markets for agricultural trade during this period would have been at Colchester, St Osyth and Manningtree. Coastal trade would have also formed an important aspect of the local economy during the Medieval period. Harwich (over 11km to the north-east) represents the main hub, with smaller sites at St Osyth, Manningtree and Beaumont Quay. The study area is largely located inland, so there are minimal records relating to coastal trade, though the few sites recorded would have fed into the wider economy during this period. There are five presumed landing places recorded along the line of the former Holland River (48668, 48669, 48667, 48659 and 48661). They likely represent lanes that linked the Gunfleet estuary to the farms and villages on the higher land, allowing crops and other local produce to be loaded easily onto boats and carried along the river for trade in the wider area and into London. Remote landing places could also be used to avoid customs control and the isolated marshes at Holland earned a reputation for smuggling which carried on until the 17th century after the estuary had been reclaimed. Likewise, some of the quays along Hamford Water earned a similar reputation.
127. Beaumont Quay (3097) would have also been a landing place during this period and would have served the nearby Beaumont Hall (NHLE List Entry 1322628, Grade II* Listed Building). Stories of smuggling don't seem to be attached to Beaumont Quay, probably because it was purpose built to export produce from agricultural activities on the Beaumont Hall estate. Goods would have been taken by boat from the quay and along Landermere Creek, out to Hamford Water then southwards along the coast to London. There is also a medieval saltern recorded at Beaumont Quay, which would have been a common sight along the marshy coastal fringes of Landermere Creek, representing the continued growth of salt making in this area since the Iron Age.
128. There are some Listed Buildings that are dated to the Medieval period: Church of Saint Mary in Little Bentley (Grade II* Listed 1239340/34504/2378), Thatched Cottage (Grade II Listed 1306598 /34294), Grove Farmhouse (Grade II Listed 1337174 /34501), Bakers Farmhouse (Grade II Listed 1322630 /34343), and Ring Cottage (Grade II Listed 1317222 /34744).
129. Of the 62 records relating to medieval evidence within the study area, 40 of those relate to findspots of items such as coins (e.g., 52961, 52885, 52891, etc.), horse

tack (e.g., 52869, 53585, 52964), personal adornment (e.g., 2315, 52966, 53272, etc.), ampullae (flasks) (52880, 50910, etc.), tiles (2377), and bells (54704). There are notable concentrations between Great Bromley and Little Bromley, and at Beaumont-cum-Moze.

25.5.3.9 *Post-Medieval*

130. Settlement patterns become much denser during the Post-medieval period, particularly at Great Clacton and Walton-on-the-Naze, as a result of growing industries, trade and economy, which is reflected on the HER: a findspot of a trade token (54787) from Sudbury dating to 1669 within the Great Holland area and a silver coin hoard (or dropped purse) deposited in the 17th century (54785).
131. One of the key industries along the coastal area was the production of Iron Sulphite which could be used to make dye, ink and sulphuric acid. The HER records one such Copperas Works (48671) at Holland Haven (Figure 25.2a-b, Volume II). The works belonged to a Mr Barton and were recorded on a 1783 plan of the Tendring Levels. The process involved gathering copperas stones (iron pyrites) that had washed out of the London Clay onto the shore, stacking them and leaving them to weather until they became copperas (green vitriol) and a toxic liquid leached out into settling ponds where it could be collected. The settling ponds are still visible on Holland Haven on the marsh side of the sea wall, though no Copperas House has been identified; this was further confirmed during the heritage walkover survey (Appendix 25.5, Volume III).
132. Despite being a small-scale quay, the extant structures at Beaumont Quay (9121) are a rare and interesting example of a 19th century quay which is scheduled (NHLE List Entry 1020688), as both the quay and lime kiln are rare examples of an East Anglian form, that survive in very good condition. The kiln is the only mixed feed (fuel/coal is mixed and burned together with the limestone charge) example surviving in this area. It represents a rare survival of a complex of contemporary features which has been largely unaltered since it was abandoned in the early 20th century. The lime kiln as well as the store building survive relatively intact. Archaeological deposits sealed below ground in the quayside area, and in and around Beaumont Cut generally, contain structural, artefactual and environmental evidence relating to the operations of the quay and the contemporary appearance of its surroundings. The remains of a sailing barge have been preserved in the alluvial deposits. Beaumont Cut is a channel cut into the marshy estuary to make a reliable navigable route along the tidal Landermere Creek.
133. The importance of coastal defence increased dramatically during the end of the Post-Medieval period, with the advent of the French Revolution and resultant Napoleonic Wars. In response, a series of Martello Towers were built along the coastline. Three of which, Towers G, H, and I (46610, 46609 and 46608, Figures 25.2a-b, Volume II) were built and subsequently demolished in the early 19th century within the landfall search area. The towers were built to defend Holland Marshes as part of the wider British coastal defences during the Napoleonic Wars. Martello Towers housed large artillery and a battery of soldiers, but the developments in rifled artillery made the towers obsolete very quickly, hence the demolition of these examples within the landfall search area. Tower G was located on a small hill near Sluice House, and its site is still known as Tower Hill. Tower G was located near what is now the centre of the Frinton Golf Course, with Tower I further up the coastline, closer to Frinton-on-Sea. Tower H was the only one in Essex that did not have a supporting battery.

134. Two Post-medieval windmills are recorded within the study area representing characteristic features of the Essex landscape during this period, continuing on from the medieval period. Great Holland Hill mill (2853) is a former smock mill, the base of which is still extant. The remaining record marks the possible location of a mill which is no longer standing (3036).
135. Record 3142 related to a former Church. The HER record is sparse, but map regression shows the site was formerly a church and has now been converted internally into a house and re-named Green Acre.
136. As with the medieval period, many of HER entries for the Post-medieval period are for findspots recorded under the PAS and comprise items such as bodkins (e.g., 50943, 54693), buckles (e.g., 50930), buttons (e.g., 54677), coins (e.g., 54773, 54771, 54785, etc.), various items of personal adornment (e.g., 53744, 54687, 54668, etc.), daggers (e.g., 54700), and pottery (e.g., 7412, 17747). Of the 62 Post-medieval HER records 29 are of finds.

25.5.3.10 *Modern*

137. Coastal defences continued to be variously built and decommissioned within the landfall area during the Modern period with the advents of the First and Second World Wars (WWI and WWII). The British Government sought to strengthen home defences as part of wider efforts, pillboxes were built as small, fortified structures to be operated by the Home Guard. As such there is one WWII pillbox (21350) recorded at The Green, Great Holland but has since been destroyed. Further south in the study area at Great Holland another WWI structure is recorded. A WWI pillbox (47909) was marked on the 3rd and 4th edition OS maps but has since been destroyed. Throughout the study area, pillboxes are recorded on the HER (e.g., 10051, 10050, 10563, etc.), although most are destroyed. However, four WWII pillboxes (10444, 10446, 10447 and 10448) survive in relatively good condition along the sea wall between Holland and Frinton (Figures 25.2a-b, Volume II and Appendix 25.5, Volume III).
138. An advanced night landing ground (19342) is recorded to the south of Beaumont-cum-Moze. The 43-acre site served the 39 Squadron Royal Flying Corps who were operating anti-Zeppelin patrols from April 1916 as part of WWI air defences. By August 1916 the site had been returned to agricultural use. No buildings were erected on this site. In view of the short duration of this landing ground's use, it is very unlikely that any evidence of the airfield survives on or below ground. The site remains in agricultural use and the original field boundaries defining the landing ground survive. Generally, these sites were intentionally hidden during the night to avoid being bombed by German aircraft. They would only be lit and ready for British aircraft to land when sufficient signal had been reached between operatives on the ground and in the aircraft.
139. Other assets recorded on the HER that relate to the World Wars include minefields (21131), anti-aircraft sites (21160 and 10052), and anti-tank obstacles (10571 and 10570).
140. Two records relate to scattered homes, The Firs (15399) and The Limes (15400) at Tendring Heath. They were part of the Tendring Union Workhouse during the early 20th century (15385) and were used to house groups of children from the workhouse. Scattered homes were used across the UK during this period as a way of integrating children into local schools rather than isolating them within the workhouse system.

They were administered centrally by the workhouse unions. The Firs is now a private home, and The Limes is a nursing home.

141. A pair of cast iron signposts (40797 and 40801) are recorded on the HER, they both sit along the B1035 road on the entry to Beaumont; one at the junction with Swan Lane and the other opposite Chapel Lane. They date to the 1920s or 1930s and were manufactured by Maldon Iron Works. They consist of a flat semi-circular parish plate finial reading "Parish of Beaumont - E.C.C", along with distances to the nearest towns etc.

25.5.3.11 *Undated*

142. The HER records a series of undated cropmarks and findspots within the study area. They are evenly distributed along the onshore cable corridor(s), evidently in areas that have not been developed and tend to be mainly agricultural. The information presented below is a summary of information held by the HER and NMP.
143. In total, 84 assets of unknown date are recorded within the study area, with the majority being documented as cropmarks. Of the 84 records, 63 represent undated cropmarks which are interspersed throughout the study area, have corresponding NMP data, and generally consist of linear features, ditches, field boundaries, enclosures, and ring ditches. Examples include a large cropmark area to the south and west of Little Bromley Hall (2460) that lies directly along the northern end of the onshore cable corridor(s), near to the onshore substation zone. The cropmarks consist of mainly linear features being part of field systems or trackways, in addition to many ring ditches and several enclosures, and a henge (Figure 25.2i, Volume II). An application has been made to Schedule this henge due to it being of national importance, and as such is considered further within this assessment in respect of any potential changes to setting and associated heritage significance (Section 25.7.2.1).
144. Occupying the north-west of the onshore substation zone is another large area of cropmarks near Riddlesdale Farm (2444), comprising a complex of linear features, rectilinear enclosures and an oval enclosure, although some marks recorded may be geological (Figure 25.2j, Volume II).
145. Examples that intersect the onshore cable corridor(s) include another large area of cropmarks (3143) near Thorpe-le-Soken, that are masked by geological features consisting of field boundaries, trackways and enclosures (Figure 25.2c, Volume II).
146. Two records on the HER are referred to as archaeological investigations (EEX 49176 and 14891) and are discussed in Section 25.5.3.12 below.
147. 15 records are related to findspots, many of which were recorded under the PAS. Undated findspots are concentrated in two areas: between Great Bromley and Little Bromley, and Beaumont-cum-Moze. As previously stated, this could be due to these areas being used for metal detecting (although no specific events are recorded on the HER), and the finds have been appropriately recorded through the PAS. Whilst these assets are noted on the HER as 'a find of unknown date' when reviewing them on the PAS database online, almost half are Iron Age coin or coin hoard finds (e.g., 51851 and 51932), alongside an Iron Age brooch (51883). The others are noted as a Medieval coin (52978), several Post-medieval finds (e.g., coins – 54775, pins – 54767, thimbles – 54699), a Roman to Medieval copper alloy casting (56451), and a Neolithic axehead (7413).

25.5.3.12 *Previous Archaeological Investigations*

148. A number of archaeological investigations have taken place within the study area, some of which are already detailed above in the HER data; therefore, this section provides a brief summary of the nature and type of assessments/surveys undertaken which have informed the known archaeological record and therefore enhanced our understanding of the historic environment in this area.
149. A watching brief of foundation trenches for a new building to the east of Ash Cottage (located near the centre of the onshore substation zone), alongside drain lines leading to it, was conducted in c.1990 by Brooks (EEX 52964), however no finds or archaeological features were found.
150. A programme of field observation prior to a tree planting scheme at Beaumont Hall (EEX 52357, 53003) in an area of known Roman pottery sherds revealed a scatter of pottery on the soil surface. The pottery consisted of three sherds of prehistoric pottery; Roman sandy grey ware, fine grey ware, grog-tempered ware and oxidised wares; Medieval and Post-medieval pottery.
151. Several field surveys have been undertaken at the remains of possible Medieval salt-workings at Beaumont Quay (HER 3097), one which provided a photograph to the HER in 1996 (EEX 52766). Another conducted by Leech in 1994 reviewed cuts in the quay to receive barges and found a square depression showing as differential vegetation growth, thought to be an area for docking barges (EEX 11151 and 14891). In addition, a field walking survey at Beaumont Quay (EEX 24062) conducted by Farrands in 1976 found late Roman to Post-medieval material, including tile and pottery finds (HER 7409, 7410, 7411 and 7412).
152. A field observation by Green (EEX 24067) conducted sometime in c. 1955, to the west of Bradfield Heath resulted in the discovery of a Neolithic Axe Head (HER 7413).
153. At Beaumont Hall (Grade II* Listed 1322628), a field observation carried out by Bennett in 1993 found numerous finds of pottery, from the prehistoric (17745), medieval (17746) and post-medieval periods (17747).
154. In the centre of the onshore substation zone, at Little Bromley, a collection of 27 fragments of burnt flint was found by F.P. Girling (EEX 8730 (and 2472 outside the study area)).
155. A desk based assessment and aerial photography report (HER 49176) was carried out at Rose Hill Quarry, Thorpe-le-Soken (towards the southern end of the study area), which, whilst the aerial photography identifies numerous linear and enclosure features, the assessment suggested there is little potential for archaeological remains.

25.5.4 Potential sub-surface archaeological remains

156. Heritage assets located within or partly within the onshore project area that are considered to potentially represent surviving below ground archaeological remains have not yet been fully evaluated through non-intrusive and intrusive (e.g., geophysical survey and trial trenching) evaluation approaches.
157. Features indicative of sub-surface archaeological remains, as indicated by data available and archaeologically assessed as part of the ADBAs (Appendix 25.1 and Appendix 25.2, Volume III) and aerial photographic, LiDAR and historic map analysis

(Annexes 25.1.1 and 25.2.1), variously include cropmarks, soil/parch marks, depressions and ditches.

158. Sub-surface archaeological remains may also be indicated by features identified in aerial photographs or historic map data as former buildings, structures or sites, which may no longer be extant as above ground remains but for which below ground remains may still be present (Annexes 25.1.1 and 25.2.1).
159. The assessment of aerial photographic and LiDAR data for the landfall search area confirmed and revealed a series of cropmark sites with particular concentrations in the vicinity of Cooks Green and Great Holland, indicative of a complex multi-period buried archaeological landscape dating from earlier prehistoric through to modern periods (Annex 25.1.1). These cropmark features were more abundant in the northern reaches of the landfall search area, due to it being much drier than the marshland surrounding the Holland Brook and former tidal estuary. By comparison, cropmark features are less plentiful in the southern reaches and the vicinity of the marshlands and Holland Brook. However, this does not preclude the potential for buried archaeological remains to survive. In fact, the wet environment is much more favourable for the preservation of natural materials such as timber, fabric and leather etc. Outside of the landfall search area, the assessment of aerial photographic and LiDAR data for the remaining areas of the onshore project area confirmed and revealed particular concentrations to the northwest and southwest of Little Bromley (Annex 25.2.1).
160. A programme of priority archaeological geophysical survey (detailed magnetometry) is ongoing at targeted locations and is expected to further inform an understanding of the sub-surface archaeological potential of the final DCO application boundary. The outstanding survey results will be incorporated into the ES submitted with the final DCO application.
161. The available results for the geophysical survey across the onshore substation zone near Little Bromley, the onshore cable route (Little Clacton Road, Area 4, SSA East, Area 9 Area 10, Tendring Green North, Area 12, East of Tendring, Area 15, Area 17 Kirby Cross West) and the landfall search area near Holland Haven are presented in Appendix 25.8 (Volume III) and summarised below.

Little Bromley

162. The geophysical survey has detected several features that can be identified as archaeological in origin. The clearest feature is the Roman Road which was identified in the northern end of the onshore substation zone (named LB_01) which runs in an east – west alignment and forms a junction with the road that links Mistley with Colchester just north-west of the site. This Roman Road has been identified on the HER via cropmarks (3168/2631).
163. In the southern part of the field there is evidence of an enclosure, likely Romano-British or earlier in chronology. The survey has covered only the northern part of this enclosure. However, a larger rectilinear enclosure has been identified from aerial photography. This contributes to the overall interpretation of this area as being intensively occupied from Prehistory.
164. The evidence for a possible Romano-British field system is present just to the south of the Roman Road. The intense Roman presence in the area is indicated by the

double ditched enclosure at the road junctions and the possible Romano-British enclosure that is present to the north of the site (outside of the survey area).

165. The majority of the geophysical survey area is dominated by superficial geology. These features occur when freezing and thawing of ground water happens throughout an extended period of time. They have been identified as water channels likely formed during the last Ice Age.

Area 4

166. The gradiometer survey has identified anomalies which may be archaeological in origin. The rectilinear enclosure with a possible kiln, located in the north-western portion of the site indicates an area of possible industrial activity. However, intrusive investigation would be required to confirm this interpretation.
167. The remains of an older field system, absent from available map sources, have been identified across the majority of the site. In addition, several ring-ditch features, similar to the circular features, identified from aerial photographs in the wider area could indicate further settlement activity.

Area 5

168. Geophysical survey has identified areas of archaeological interest. The rectilinear enclosure in the centre of the survey area indicates prehistoric activity within the site, however, this interpretation would have to be confirmed by additional investigation. Two other smaller enclosed areas within the survey extent indicate further settlement activity or animal husbandry within the site.
169. Numerous features that are noted on the 1898 Second Edition OS mapping are identified throughout the survey. Most of them pertain to former field boundaries. Additionally, two locations of backfilled ponds and a demolished farmhouse have been identified.
170. The remaining anomalies are thought to be modern or natural in origin, including agricultural activities, such as drainage and ploughing. Numerous geological anomalies are thought to be associated with former water channels and alluvial deposits.

Area 9

171. The gradiometer survey did not detect any anomalies of archaeological origin. Two field boundaries, which are known from 1898 Second Edition OS mapping have been identified.
172. The remaining anomalies are thought to be modern or natural in origin, such as field drains, ploughing, and utilities. Numerous geological anomalies are thought to be associated with former water channels and alluvial deposits.

Area 10

173. The gradiometer survey has identified the location of a possible Bronze Age round barrow. Similar barrows are known to be in the general vicinity of the site. However, this feature could as well be natural in origin and this interpretation would require additional investigation for confident confirmation.

174. Several field boundaries, as well as a demolished dwelling and a pond, which correspond with features from the 1898 Second Edition OS map have been identified within the survey area.
175. The remaining anomalies are thought to be modern or natural in origin. Numerous geological anomalies are thought to be associated with former water channels and alluvial deposits.

Tendring Green North

176. The gradiometer survey has identified the location of a truncated round ditch that could relate to a Bronze Age round barrow. This interpretation is tentative at best and would require additional investigation to be confirmed. There is no evidence for the barrows identified from cropmarks elsewhere in the survey area.
177. Several field boundaries, as well as a path, which are known from the 1898 Second Edition OS map have been identified within the survey data.
178. The remaining anomalies are thought to be modern or natural in origin. Numerous geological anomalies are thought to be associated with former water channels and alluvial deposits.

Area 12

179. The gradiometer survey has identified a possible field boundary that predates the available maps. Additionally, five field boundaries that were known from the 1898 Second Edition OS map have been identified as very weak positive responses.
180. The remaining anomalies are thought to be modern or natural in origin. Numerous geological anomalies are thought to be associated with former water channels and alluvial deposits.

East of Tendring

181. The gradiometer survey has successfully identified features that are considered archaeological in origin. A possible round barrow with a central pit has been identified within the survey area, located 70 m north-west of a tumulus known from the historical maps and aerial photography. However, the known barrow is not evident in the data, suggesting a low level of preservation.
182. Former field boundaries that have been indicated on 1898 OS mapping have been identified across the survey area. The remaining anomalies are thought to be modern or natural in origin. Numerous geological anomalies are thought to be associated with former water channels and alluvial deposits.

Area 15

183. The gradiometer survey did not identify any anomalies that would be considered archaeological in origin.
184. Indication for modern farming has been identified in form of a spread of surface material and land drains.

Area 17

185. The gradiometer survey did not identify any anomalies that are considered archaeological in origin. Two former field boundaries that are known from the 1898 Second Edition OS map have been identified in the area.

186. There is no evidence of the ring ditches and pits noted as crop marks, however the area is dominated by natural geological responses, which may make the identification of weak archaeological anomalies difficult.
187. Indication of modern farming has been identified in the form of land drains.

Kirby Cross West

188. The gradiometer survey has detected several features, which can be identified as possibly archaeological in origin. A rectilinear enclosure has been identified at the eastern part of the site that could relate to a livestock enclosure. It could as well be a result of periglacial processes and as such natural in origin. This does not correspond with any of the cropmarks recorded across the area. None of the recorded cropmarks have been identified. It is possible that the cropmarks are a product of natural processes or that sediments across the site are obscuring their detection.
189. A ring ditch feature in the southern part of the survey likely indicates a prehistoric roundhouse or a round barrow and may be associated with the Bronze Age activity noted in the surrounding area.
190. Several pits of unknown origin have been identified. While these have the potential to be archaeological, they could equally be the result of the natural undulation in the underlying deposits.
191. The remaining anomalies are thought to be modern or natural in origin. The modern anomaly relates to a service along the north-eastern edge of the area.

Little Clacton Road

192. The gradiometer survey has not identified any anomalies that can confidently be interpreted as archaeology. However, several areas of possible archaeology have been identified.
193. A possible roundhouse or round barrow is located in the north-eastern part of the survey area along with associated pit and ditch features. A small enclosure is also located to the north of this. This may relate to prehistoric settlement activity.
194. A large enclosure has been identified in the north-western part of the survey area. However, it could equally relate to a past channel of the Holland Brook River.
195. The remains of a coaxial field system have likely been identified as a series of possible ditch features. These are likely to be medieval in date, possibly associated with cropmarks noted in the area.
196. The remaining anomalies are thought to be modern or natural in origin. Numerous geological anomalies are thought to be associated with former water channels and alluvial deposits.

Holland Haven

197. The gradiometer survey has detected several features, which can be identified as archaeological in origin. The clearest one is the ring ditch feature in the northern part of the survey. It indicates a prehistoric roundhouse or a ring barrow and may be associated with the limited Bronze Age activity noted in the surrounding area.
198. A possible embankment or water management system has been identified along the western edge of Gunfleet Estuary. This appears to be a ditch and bank feature with angular turns suggesting a manmade rather than natural origin.

199. Towards the northern end, and extending into, Gunfleet Estuary are two parallel ditch features. The origin of these is unclear from the geophysical data alone. They may represent an archaeological trackway or feature associated with the estuary. However, they could equally relate to modern agricultural activity.
200. The remaining anomalies are thought to be modern or natural in origin. These include land drains and areas of alluvial deposits.
201. A summary of the sub-surface archaeological remains identified within the onshore project area from the desk based and non-intrusive surveys is presented in Table 25.11 and Figures 25.2a-j, Volume II.

Table 25.11 Summary of potential archaeological remains identified to date

EHF Number	APS ID	WA ID (geophysics results)	Description	Perceived Heritage Importance
Landfall Search Area				
10796	N/A	N/A	Pillbox (destroyed), cliff edge, Holland Haven.	Low
10045	N/A	N/A	Pillbox (destroyed) E of Holland Haven Country Park.	Low
46609	N/A	N/A	Site of Martello Tower H, Holland Marsh, built in 1810-12 demolished in 1819.	Low
10049	N/A	N/A	Pillbox (destroyed) on the sea wall at Battery Point	Low
21357	N/A	N/A	'Diver' Site No K14 (destroyed), Frinton Golf Course	Low
53625	N/A	N/A	A PAS findspot of Late Mesolithic to Middle Neolithic date.	Low
10563	N/A	N/A	Pillbox (destroyed), "Thatched Cottage", Greensward, Frinton.	Low
46608	N/A	N/A	Site of Martello Tower I, Battery Point, Frinton. Built in 1810-12 demolished in 1819.	Low
48658	N/A	N/A	Site of the former Gunfleet estuary, used as a port and haven in the medieval period, gradually silted up in the post-medieval period.	Medium
48667	N/A	N/A	Landing place accessed from the Clacton Road, on the Gunfleet estuary.	Low
48669	N/A	N/A	Landing place at Lower Barn, Gunfleet Estuary	Low
16985	APS_10a	N/A	Former field boundaries visible as cropmarks and residual earthwork banks.	Low-Medium
48668	APS_15a	N/A	Landing Place associated with Great Holland Hall, at Great Holland Hall, Gunfleet Estuary. Former field Boundaries visible as extant boundaries	Low-Medium
6560	N/A	N/A	Perforated stone axe, Bronze Age, Lower Barn, Great Holland.	Low
N/A	N/A	Field HNN_03: 4100	Several features identified in the geophysical survey as archaeological in origin. The clearest one is feature 4100, a ring ditch feature in the northern part of the survey. It indicates a prehistoric roundhouse or a ring barrow and may be associated with the limited Bronze Age activity noted in the surrounding area.	Low-High

EHF Number	APS ID	WA ID (geophysics results)	Description	Perceived Heritage Importance
N/A	N/A	Field HNN_08: 4101	A possible embankment (feature 4101) or water management system was identified during the geophysical survey along the western edge of Gunfleet Estuary. This appears to be a ditch and bank feature with angular turns suggesting a manmade rather than natural origin.	Low-Medium
Onshore Cable Corridor(s)				
N/A	N/A	Field LCR_04: 4000, 4001, 4002, 4003	A possible roundhouse or round barrow (feature 4000) is located in the north-eastern part of the field along with associated pit and ditch features (feature 4001). A small enclosure is also located to the north of this (feature 4002). This may relate to prehistoric settlement activity. Tentatively identified as archaeology due to alluvial sediment in the area suggesting a geological origin. A large enclosure 4003 was identified in the north-western part of the survey area. However, it could equally relate to a past channel of the Holland Brook River.	Low-High
N/A	N/A	Field LCR_01: 4004	Feature 4004 was detected in the northern of field LCR_01. It could likely represent a pit like feature. It also showed thermoremanent features that are a consequence of intense burning.	Low
51089	N/A	N/A	A PAS findspot of a socketed axe head of Late Bronze Age date.	Low
2812	N/A	N/A	Partly polished axe, found at Great Hall Farm.	Low
10626	N/A	N/A	Mainly geological features some possible archaeological features - linear features and pits.	Low-Medium
2978	N/A	N/A	Mainly geological features some possible archaeological features - linear features and pits.	Low-Medium
17224	N/A	N/A	Cropmark of geological marks, Manor Farm.	Low
2975 2983	APS_09a	N/A	Field System which overlies earlier boundaries, trackways and possible pit alignments visible as cropmarks and soilmarks. Area is heavily disturbed by geological cropmarks which may be masking archaeological features. There are also a large number of pits which may be natural features.	Low-Medium
54787	N/A	N/A	A PAS findspot of a token, Post-medieval to Unknown date.	Low
2814	N/A	N/A	Butt end of polished axe head, from Great Holland.	Low
3362	N/A	N/A	Macehead found at Great Holland.	Low
3627	APS_14a	N/A	Square enclosures visible as cropmarks likely part of a Post Medieval field system. Underlying ditched feature is of unknown origin. Area is heavily disturbed by geological	Low-Medium

EHER Number	APS ID	WA ID (geophysics results)	Description	Perceived Heritage Importance
			cropmarks which may be masking archaeological features. There is also a small number of pits.	
16986	APS_01	LCR_04: 4010	Undated field boundaries visible as cropmarks. The geophysical survey identified a weak positive anomaly (Feature 4010), interpreted as a former field boundary.	Low
16986	APS_02	N/A	Cropmarks of linear features - field boundaries.	Low
3570 46193	APS_03	N/A	Field boundaries visible as cropmarks. Birch Hoe Farm: Linear features, field boundaries, trackways running north to south, pits, all masked by periglacial features. East Clacton reservoir and pumping station: Undated ditches and pits of probable Post-medieval origin.	Low-Medium
3143 17231	APS_04	N/A	Field boundaries visible as cropmarks. East of Thorpe Park: Cropmarks masked by geological features: field boundaries, trackways and enclosures. Grove Fruit Farm: Cropmark of linear features; field boundaries and possible enclosure	Low-Medium
N/A	N/A	KWC_04: 5300	A rectilinear enclosure (feature 5300) was identified during the geophysical survey at the eastern part of the field that could relate to a livestock enclosure.	Low-Medium
N/A	N/A	KWC:07: 5301	A ditch-like feature (5300) identified during the geophysical survey with an opening to the north-west. This may relate to prehistoric activity, such as a roundhouse or a round barrow.	Low-High
N/A	N/A	KWC_02: 5302, 5303	Two very weak positive L-shaped anomalies (5302 & 5303) located in the southern portion of field KCW_02. These anomalies indicate ditch-like features that may relate to agricultural activity, such as field boundaries or parts of small enclosures.	Low-Medium
57299	N/A	N/A	A PAS findspot of a coin of Roman date.	Low
47285	APS_05	N/A	Field boundaries visible as cropmarks at Thorpe Cross.	Low
46798	APS_06	N/A	Field boundaries visible as cropmarks at New Hall.	Low
46801	APS_07	N/A	Field boundaries visible as cropmarks at Golden Lane.	Low
3160	N/A	N/A	Near Thorpe Green, possible cropmarks comprising linear features, pits, and possibly two ring ditches. These latter marks are on grassland and may be grazing marks rather than archaeological.	Low-Medium
52966	N/A	N/A	A PAS findspot of a finger ring of Medieval date.	Low

EHER Number	APS ID	WA ID (geophysics results)	Description	Perceived Heritage Importance
54775	N/A	N/A	A PAS findspot of coins of unknown date.	Low
52954	N/A	N/A	A PAS findspot of a coin of Medieval date.	Low
52955	N/A	N/A	A PAS findspot of a coin of Medieval date.	Low
54767	N/A	N/A	A PAS findspot of a pin of unknown date.	Low
19342	N/A	N/A	WWI landing ground at Beaumont, south of Beaumont Hall, Night landing ground in use from April to August 1916.	Medium
3188	N/A	N/A	South west of Beaumont Hall, cropmark of a double ring ditch: outer ditch is wide and dark, inner ring slightly irregular and very faint.	Low-High
17243	APS_08	N/A	Field system visible as cropmarks and cropmarks of a linear feature (low validity), Thorpe-le-Soken	Low
3159	N/A	N/A	North west of Thorpe Green: cropmarks comprising pits and two ring ditches.	Low-High
3073	N/A	N/A	Barker's Farm - suggested line of Roman road.	Low-High
17241 3042	APS_09	N/A	A tumulus depicted on the earlier edition OS mapping indicates the position of a likely Bronze Age round barrow which was visible later as a cropmark. Tumulus marked on 6" OS series of 1874-5, at Mill Hill. Cropmark of field boundaries.	Low-High
N/A	N/A	EOT_01: 4900	Possible ring ditch with a central pit (feature 4900) identified during the geophysical survey which could represent prehistoric funerary activity. Located 70m north-west of Mill Hill (EH 3042).	Low-High
N/A	N/A	EPT_05: 4901	Ditch-like feature (4901) identified during the geophysical survey, possibly a field boundary that predates the available maps.	Low
48329 3189 3136	APS_10	Area 12: 4802, 4803	Cropmarks of ring ditches and linear ditches and possible trackways, and field boundaries near Lodge Lane. South of Wolves Hall Farm, cropmarks comprising linear features and trackways. Field boundaries (4802 & 4803) also identified during the geophysical surveys.	Low-Medium
3179	APS_11	N/A	Field system and possible drainage visible as earthworks. Cropmarks comprising a possible ring ditch, plus linear features which may be geological or field drainage, north of Tendring Green	Low-Medium

EH Number	APS ID	WA ID (geophysics results)	Description	Perceived Heritage Importance
N/A	N/A	TNG_04: 4700	Possible ring ditch, barrow, or small enclosure (feature 4700) identified during the geophysical survey. This interpretation is tentative due to the very weak magnetic anomaly.	Low-High
N/A	N/A	TNG_04: 4701, 4702	Two ditch features (4701 & 4702) identified during the geophysical survey potentially the remains of former field boundaries, absent from historical maps.	Low
N/A	N/A	TNG_01: 4003, 4004	Two potential ditch features (4003 & 4004) identified during the geophysical survey on a rectilinear alignment are noted in the southern portion of the survey in field TGN_01. They delimit a 90 m by 90 m area on a south-west to north-east orientation.	Low
3167	APS_14	N/A	Field system visible as extant on 1950s aerial photographs and as cropmarks on satellite imagery. Cropmarks comprising a possible double-ditched trackway, an adjoining irregular linear feature, and a possible ring ditch, although the aerial photo is rather dark and these features are not clear to the east of Hempstall's Farm.	Low-Medium
N/A	N/A	Area_10_02: 4600	Feature 4600 identified during the geophysical survey pertains to a possible earthen bank of unknown origin. The presence of Bronze Age barrows and round houses in the wider landscape suggests this could be of the same origin. It could as well be a response from superficial deposits and as such reflect a natural feature.	Low-High
N/A	N/A	Area_10_01: 4601	Feature 4601 identified during the geophysical survey is a curvilinear feature running on a south-west to north-east orientation for 26m. This indicates a ditch-like feature and relate to a small enclosure	Low-Medium
17325 3132 3133 3177 47376	APS_20	N/A	Enclosures and field boundaries visible as cropmarks. Bradfield Lodge: cropmarks of former field, woodland and irregular enclosure. South of Bradfield Lodge: cropmarks comprising trackways, field boundaries and ring ditches. Cropmark of a possible mill mound west of Abbots Hall, plus linear features which may be geological to the north of Abbott's Hall.	Low-Medium
50930	N/A	N/A	A PAS findspot of a buckle of Post-medieval date.	Low
51077	N/A	N/A	A PAS findspot of a socketed axe head of Middle Bronze Age to Late Bronze Age date.	Low
53757	N/A	N/A	A PAS findspot of an ear ring of Post-medieval date.	Low
3130	APS_18	N/A	Cropmarks of field boundaries and possible trackways to the east of Mulley's Farm.	Low
3130	APS_15	N/A	Cropmarks of linear ditches and a series of five ring ditches to the east of Mulley's Farm. Also cropmarks comprising field boundaries and trackways.	Low-Medium

EHER Number	APS ID	WA ID (geophysics results)	Description	Perceived Heritage Importance
3148	APS_12	N/A	Cropmark of three ring ditches, plus some linear features of field and parish boundaries at Hawkins Farm.	Low-Medium
51867	N/A	N/A	A PAS findspot of a coin of unknown date.	Low
54704	N/A	N/A	A PAS findspot of a bell of Medieval to Post-medieval date.	Low
55180	N/A	N/A	A PAS findspot of a bell of Medieval to Post-medieval date.	Low
56331	N/A	N/A	A PAS findspot of a coin of Late Iron Age to Roman date.	Low
N/A	N/A	Area_05: 4400, 4401, 4402	A rectilinear enclosure (4400, 4401) identified during the geophysical survey in the centre of the survey area indicates prehistoric activity within the site. Feature 4402 may relate to a small stone wall and is likely, not contemporary with the enclosure at 4400.	Low-Medium
N/A	N/A	Area_04: 4003	Feature 4003 identified during the geophysical survey occupies a square area of 21 m by 21 m and is 2 m in width, pertaining to ditch-like features. An oval dipolar anomaly is in the north-western corner of the feature which occupies an area of 6 m by 3.5 m. This kind of anomaly could relate to an oven or a kiln, however, it could equally indicate a ferrous object. The feature at 4403 has been interpreted as a ditched enclosure, however, further investigation would be required to determine its origin.	Low-Medium
N/A	N/A	Area_03: 4404	Feature 4004 identified during the geophysical survey is a weak positive anomaly measuring up 1.5 m wide. It runs on a WSE – ENE orientation for 28 m and curves towards the north at its eastern end for an additional 5 m. It indicates a ditch-like feature.	Low
N/A	N/A	Area_06	Feature 4005 identified during the geophysical survey is a positive curvilinear anomaly measuring 12 m long by 2 m wide and indicates a ditch-like feature that could relate to archaeological activities	Low
N/A	N/A	Area_04_02: 4301, 4302, 4303, 4304, 4305, 4306, 4307, 4308, 4309, 4311, 4312	The gradiometer survey has identified anomalies which may be archaeological in origin. The rectilinear enclosure with a possible kiln (4300), located in the north-western portion of the site indicates an area of possible industrial activity The remains of an older field system (4301-4309), absent from available map sources, have been identified across most of the site. In addition, several ring-ditch features (4311 & 4312, similar to the circular features, identified from aerial photographs in the wider area could indicate further settlement activity	Low-High
2460	APS_19	LB_07: 4227 LB_08: 4225, 4229	Cropmarks covering a large area, mainly linear features being part of field systems or trackways, but there are also many ring ditches and several enclosures, and what may be a henge, south and west of Little Bromley Hall.	Low-High

EHHER Number	APS ID	WA ID (geophysics results)	Description	Perceived Heritage Importance
		LB_09: 4235, 4211, 4212, 4213, 4214, 4215 4230 LB_00: 4228	Positive linear anomalies on geophysical survey indicating ditch-like features. Identified as former field boundaries. Feature 4235 is a path and features 4211-4215 could form a possible Romano-British enclosure or ditch system, but could also be natural.	
52880	N/A	N/A	A PAS findspot of an ampulla of Medieval date.	Low
52884	N/A	N/A	A PAS findspot of a strainer of Medieval date.	Low
53734	N/A	N/A	A PAS findspot of a finger ring of Post-medieval to Unknown date.	Low
54689	N/A	N/A	A PAS findspot of a pendant of Post-medieval date.	Low
54690	N/A	N/A	A PAS findspot of an unidentified object of Post-medieval date.	Low
54693	N/A	N/A	A PAS findspot of a bodkin of Post-medieval date.	Low
54694	N/A	N/A	A PAS findspot of a thimble of Post-medieval date.	Low
54700	N/A	N/A	A PAS findspot of a dagger of Post-medieval date.	Low
2607 2573	APS_27	N/A	Linear features at right angles to Roman road, probably field division, at Badley Hall. Roman road, linking Mistley with Colchester. Site is connected to APS sites 23, 30 and 31.	Medium
Onshore Substation Zone				
54670	N/A	N/A	A PAS findspot of a coin of Post-medieval date.	Low
17486 2668 3168 2631	APS_26	LB_01: 4200, 4201, 4202, 4203, 4204, 4205, 4206, 4207, 4208, 4209, 4210, 4216, 4217, 4218, 4231	Site of Roman road (feature 4200) and associated linear features including field boundaries. Some features confirmed by geophysical survey, such as the Roman Road, field system, and possible enclosures. East-west alignment of possible Roman road through Horsleycross Street (HER 3168) extending to the north of Little Bromley (HER 2631). Also, location of former Lower Barn (4231). North of Norman's Farm are cropmarks of linear features (HER 17486) Three ring ditches, one with only half its circumference visible are recorded north of Norman's Farm (HER 2668).	Low-High
N/A	N/A	LB_02: 4219, 4220	Positive linear anomalies on geophysical survey indicating ditch-like features interpreted as former field boundaries.	Low
2461	N/A	LB_05:4223	Possible ring ditch recorded at Cattsgreen Farm.	Low-Medium

EHER Number	APS ID	WA ID (geophysics results)	Description	Perceived Heritage Importance
			Positive linear anomalies on geophysical survey indicating ditch-like features interpreted as former field boundaries.	
2460	APS_19	LB_04: 4222, 4221, 4232, 4234, 4233 LB_05: 4224 LB_06: 4226	Cropmarks covering a large area, mainly linear features being part of field systems or trackways, but there are also many ring ditches and several enclosures, and what may be a henge, south and west of Little Bromley Hall. Positive linear anomalies on geophysical survey indicating ditch-like features interpreted as former field boundaries (Field 4, 5, 6). Also, location of demolished Cole's Farm (4232), and path (4234 and 4233).	Low-High
2468	N/A	N/A	Sesterce, probably of Hadrian, found in 1930, at Holly Lodge	Low
51070	N/A	N/A	A PAS findspot of a hoard Middle Bronze Age to Late Bronze Age date.	Low-Medium
50910	N/A	N/A	A PAS findspot of an Ampulla, Harness, Pendant, and Tokens of Medieval to Post-medieval date.	Low

25.5.5 Archaeological Potential within the onshore project area

202. The overall archaeological potential within the onshore project area, as assessed in the ADBA's (Appendix 25.1 and Appendix 25.2, Volume III) prior to the assessment of the geophysical survey data, is considered to be high, with the following key distinctions drawn out based on information available to date:

- For the Palaeolithic, Mesolithic, and Neolithic periods, there is a moderate likelihood of finds limited to lithic artefacts. Evidence within the immediate vicinity at Lawford (near to the onshore substation zone), comprises evidence for a more settled existence from the Neolithic period onwards, although most likely in the form of lithic finds.
- Bronze Age funerary activity in the form of cropmark evidence focused around the Little Bromley area (near to the onshore substation zone), suggesting a moderate to high likelihood for unrecorded assets relating to funerary practice. Similarly, there is potential for Bronze Age finds around Beaumont-cum-Moze and Great Holland.
- Iron Age evidence is demonstrated by the high density of findspots to the south of Little Bromley. Also, smaller concentrations of findspots near to Lawford, Beaumont-cum-Moze, and Great Holland, suggesting a moderate likelihood for this period for these areas in particular.
- Romano-British activity is in abundance to the north-west of Little Bromley (across the onshore substation zone) where a small settlement is likely present at the intersection of various Roman roads radiating from Colchester and out to coastal settlements/harbours. Similar concentrations are around Little Bromley and Beaumont-cum-Moze and to a lesser degree at Beaumont Quay. Any previously unrecorded assets would likely be representative of the road network and land-use in association with settlement and subsistence. Note, the geophysical survey undertaken across the onshore substation zone has provided enhanced information for this site (see Section 25.5.4).
- High likelihood of unrecorded assets relating to the medieval period (and potentially the early medieval period) as evidence by the agricultural use of the land, and will likely relate to settlement, subsistence, and coastal trade networks. Assets relating to settlement evidence would potentially be concentrated in the vicinity of existing settlements, evidenced by concentrations south of Little Bromley, around Beaumont-cum-Moze and Thorpe-le-Soken, with dispersed finds and cropmark evidence in the wider area.
- Similarly with the Post-medieval period, unrecorded assets are likely to relate to settlement, commerce, agriculture and industry concentrated around established villages and towns. Concentrated evidence is noted around Little Bromley, Horsley Cross and Beaumont-cum-Moze.
- Moderate likelihood of surviving unrecorded evidence relating to social housing and defensive measures during the 19th century, WWI and WWII, particularly around the coastal areas.

203. The archaeological potential within the onshore project area is based on an assessment of data obtained through an assessment of baseline data gathering and survey campaigns to inform the assessment. As the EIA progresses, ongoing survey work will further inform and add to the archaeological potential within the onshore project area.

25.5.6 Above ground Archaeological Remains and Heritage Assets

204. Features considered to represent above ground heritage assets within the onshore project area are summarised in Table 25.12.

Table 25.12 Possible above ground heritage assets within onshore project area

EHF Number	APS ID	Description	Perceived Heritage Importance
Landfall			
10044	N/A	Pillbox at Holland Haven Country Park. A hexagonal, concrete type FW3/22 pillbox.	Low-Medium
10046	N/A	Pillbox base at Chevaux de Frise Point. There is the base of a pillbox on top of the sea wall.	Low-Medium
10047	N/A	Pillbox on the sea wall east of Chevaux de Frise Point. Standing on the top of the sea wall overlooking the North Sea is a hexagonal concrete type FW3/22 pillbox (source 1).	Low-Medium
10048	N/A	Pillbox on the sea wall at Sandy Point. An FW3/22 pillbox standing on the sea wall at Sandy Point.	Low-Medium
48671	N/A	Site of Mr Barton's Pans, Holland Haven, at the mouth of the former Gunfleet Estuary. Thought to be copperas settling pans.	Low-Medium
2870	N/A	Vicinity of Holland Haven: Circular earthwork.	Low
Onshore Cable Corridor(s)			
3143, 3157	APS_04	Field boundaries visible as cropmarks on historic aerial photographs and satellite imagery with residual earthwork remains visible on LiDAR data.	Low-Medium
3162	APS_09	A tumulus depicted on the earlier edition OS mapping indicates the position of a likely Bronze Age round barrow which was visible later as a cropmark on aerial photographs over its retaining ditch. Field boundaries visible as cropmarks on satellite imagery with residual earthwork remains visible on LiDAR data.	Medium-High
Onshore Substation Zone			
No above ground heritage assets within the onshore substation zone.			

205. These heritage assets represent only those within the onshore project area which are considered to represent above ground remains as indicated by descriptive information held by the HER and assessed as a result of the aerial photographic, LiDAR and historic map analysis.
206. It is also acknowledged that examples of above ground historic earthworks are a rare resource within Tendring as a result of agricultural activity and as such are considered valuable where they do survive as above ground features.

25.5.7 Heritage Importance

207. The non-designated heritage assets within the onshore project area (identified to date as part of this assessment) are examples of locally common features representing Post-medieval agriculture, and modern military activity. Based on information available to date, these assets may contain evidence that would contribute to understanding the archaeological resource of the local area. They are therefore anticipated to be of low heritage importance.
208. The previously recorded non-designated heritage assets also, however, include possible prehistoric and/or Roman features represented by cropmarks. Given the uncertainty regarding the origin of potential sub-surface archaeological remains of this nature (based on available data), this chapter has been prepared in line with the precautionary principle whereby the highest likely level of importance may be assigned and assessed within Section 25.7, as necessary. This precautionary approach represents good practice in archaeological impact assessment and reduces the potential for impacts to be under-estimated.
209. For the previously unrecorded non-designated heritage assets, identified as a result of the analysis of aerial photography, LiDAR data and historic mapping (Appendix 25.1, Annex 25.1.1 and Appendix 25.2, Annex 25.2.1 (Volume III)) it has not yet been possible to determine the precise nature, extent or date of these features. It may also be the case that some (or many) of the features prove to be non-archaeological. Given this uncertainty, these potential heritage assets have also been assigned a precautionary heritage importance, where appropriate, depending on the nature of the asset in question, against which potential impacts have been assessed in Section 25.7.

25.5.8 Heritage Setting Considerations

210. Designated and non-designated heritage assets have been considered as part of an ongoing heritage setting assessment, the initial results with respect to the Project's onshore infrastructure are presented in Appendix 25.3 (Volume III). An initial screening exercise with respect to the Project's offshore infrastructure and potential change to the setting of coastal heritage assets is presented in Appendix 25.4 (Volume III).
211. The heritage setting assessment initially focussed on all designated heritage assets which are regarded as heritage assets with a medium to high heritage importance, in line with criteria outlined in Table 25.7. However, following consultation with the ETG regarding the heritage assets located within the 5km study area around the onshore substation zone, an additional (non-designated) heritage asset was included for assessment as it is considered to be of national importance and equivalent to a Scheduled Monument (see Table 25.1).
212. The heritage assets considered as part of the initial setting assessment for the Project's onshore infrastructure include:
- Crop mark site south of Ardleigh (NHLE 1002146 – Scheduled Monument);
 - Settlement site north-north-east of Lawford House (1002157 – Scheduled Monument);
 - Church of St Mary (NHLE 1337175 – Grade II* Listed Building);
 - Jennings' Farmhouse (NHLE 1111459 – Grade II Listed Building); and

- Cropmark site south and west of Little Bromley Hall (EHER 2460 – specifically the non-designated cropmark of a henge).
213. In consultation with the ETG, heritage viewpoints were agreed at these locations with the exception of the Scheduled settlement site near Lawford House as it was confirmed at the site meeting (12th July 2022) that no meaningful views would be achievable from the asset. Photomontages from the agreed heritage viewpoints are presented in Appendix 25.3 (Volume III).
214. As the EIA progresses and the onshore substation zone is refined further, a re-evaluation of Step 3 (assess the effects of the Project) and consideration of Step 4 (explore ways to maximise enhancement or minimise harm) of the setting assessment (Historic England 2017) will be undertaken and presented as an updated technical appendix to the ES chapter.
215. The coastal heritage assets considered to date (to inform the findings of the PEIR) along the coastline between Walton-on-the-Naze and Clacton-on-Sea as part of the screening exercise with respect to the Project's offshore infrastructure include (listed from north to south):
- Old Lifeboat House (NHLE 1455213 – Grade II Listed Building);
 - 40-44, The Parade (NHLE 1111508 – Grade II Listed Building);
 - Walton Conservation Area;
 - Martello Tower K and associated battery south west of Walton Mere (NHLE 1016787 – Scheduled Monument, and 1111504 – Grade II Listed Building);
 - Seaspan, No. 4 Audley Way (NHLE 1392229 – Grade II Listed Building);
 - Church of St Mary (NHLE 1111530 – Grade II* Listed Building);
 - Frinton Conservation Area;
 - Pillbox at Holland Haven Country Park (EHER 10044 – non-designated asset);
 - Clacton Seafront Conservation Area;
 - Martello tower and brick lined moat, Martello tower F, Marine Parade West, Clacton-on-Sea (NHLE 1111520 – Grade II Listed Building); and
 - Martello tower adjacent to sea wall, Butlins Holiday Village, Martello tower E (NHLE 1337150 – Grade II Listed Building).
216. Further assessment will, however, be undertaken to inform the final ES utilising the ZTV for the Project's offshore infrastructure to identify any other coastal areas, and associated heritage assets, which may require consideration of any change to their setting and associated heritage significance. This is likely to include a larger study area, in accordance with the SLVIA ZTV, potentially extending northwards towards Aldeburgh in East Suffolk and further south towards Margate in Kent.
217. The full setting assessment for both onshore and offshore infrastructure will be reported on at the ES stage in support of the DCO application.

25.5.9 Historic Landscape Characterisation

218. The HLC data held by the HER has been obtained and is summarised and displayed in the Cable Landfall ADBA (Appendix 25.1 (Volume III)) and the Cable and Substation ADBA (Appendix 25.2 (Volume III)). It displays the broad HLC groups which the onshore project area crosses, and are described in detail in the report: Essex Historic Landscape Characterisation Project (Essex County Council and Historic England, 2011).
219. As an overview, the onshore project area is mainly characterised by pre-18th century irregular fields with later enclosure of common fields. Historically the settlement character is very dispersed and rural. The coastline is marked by both improved and unimproved coastal marsh, and the three valleys which cross the onshore project area are characterised by extensive areas of meadow pasture.
220. The onshore project area crosses twelve parish boundaries and one protected lane, Church Lane in Little Bentley. These boundaries/lanes are likely to date back to the medieval period. Any hedgerows associated with these boundaries are classed as “Important Hedgerows” and are therefore considered to be heritage assets of medium heritage importance.

25.5.10 Tendring District Historic Environment Characterisation

221. The historic character of the landscape has been further interpreted as part of the Tendring District Historic Environment Characterisation project. Details of each Historic Environment Characterisation Area (HECA) and each Historic Environment Character Zone (HECZ) for the onshore project area is provided within Appendix 25.1 and Appendix 25.2 (Volume III). The following is a summary of HECAs which falls within the study area.
222. There are five main HECAs which fall within the study area.
223. Great Oakley (HECA 3) extends across the centre of the study area. The fieldscape is largely ancient in origin, but significant areas have been affected by Post-medieval enclosure and post war boundary loss. The area is likely to contain deposits relating to widespread prehistoric activity and occupation. There are a range of cropmarks across the area.
224. South East Tendring Plateau and the Sokens (HECA 6) extends across the south of the study area including the landfall search area. The landscape is characterised by a dispersed historic settlement pattern, although several small villages and greens provide foci, a fieldscape of pre-19th century and later enclosure and a cluster of small ancient woodlands in the north of the area. The Holland Brook valley comprises enclosed meadows and reclaimed tidal marshes and is a significant feature running through the middle of and draining the area which is likely to contain well preserved palaeoenvironmental deposits. The archaeological record is largely dominated by concentrations of multi-period cropmarks although WWII defensive structures are also present due to the proximity to the coast.
225. St Osyth and Great Bentley (HECA 11) extends into the north of the study area at the junction between the onshore cable corridor(s) and the onshore substation zone. The fieldscape is of ancient origin comprising irregular enclosure, with some later enclosure of the former heathlands and greens. There has been moderate post-1950 boundary loss throughout the area. A

number of cropmark complexes attest to the archaeological potential of the area. These include ring-ditches of probable Bronze Age date, settlement enclosures and trackways of later prehistoric or Roman date and probable medieval field boundaries.

226. Ardleigh (HECA 12) extends into the north western reaches of the study area in the onshore substation zone. The area is characterised by large areas of former heathland enclosed by agreement in the early 19th century. Elsewhere the fieldscape is largely of ancient origin and irregular but there has been moderate loss of field boundaries since the 1950s. The archaeology of this wider area is dominated by cropmarks including the Scheduled cropmark complex south of Ardleigh (NHLE List Entry 1002146).
227. Little Bentley Area (HECA 13) extends into the study area between Little Bromley and Lawford across the north of the onshore substation zone. The wider area is characterised by heathland which is likely medieval in origin. The heathland was largely enclosed by the mid-19th century as part of wider agriculture developments, the current fieldscape comprises a mixture of later enclosure by agreement and irregular fields of ancient origin. Post 1950s boundary loss has been moderate. There is a high density of cropmarks throughout the area, suggesting it has long been the subject of human occupation and activity. In addition to the more common cropmark typologies in Tendring, two parallel cropmarks representing roadside ditches clearly illustrate the line of a Roman road from Colchester to a purported Roman settlement at Mistley.

25.5.11 Geoarchaeological and Palaeoenvironmental Potential

228. The geoarchaeological desk-based assessment (GDBA) (Appendix 25.6 (Volume III)) identified deposits of archaeological and geoarchaeological interest within the onshore project area. These include Pleistocene fluvial deposits and Brickearth, and Alluvium of Holocene date with some potential for Pleistocene and/or Holocene Head/Colluvium to be present. These deposits are considered to have a perceived heritage importance of medium to high.
229. Pleistocene fluvial deposits are expected to be present along much of the onshore cable corridor(s) but are unproven in areas where geological records are absent. Sands and gravels, interpreted as part of the Kesgrave terraces sequence, were recorded during geoarchaeological monitoring of ground investigation (GI) boreholes at the proposed landfall of the Five Estuaries Offshore Wind Farm (Appendix 25.9, Volume III). There is moderate to high potential for Lower to Middle Palaeolithic archaeology and faunal remains to be present within these deposits, or for fine-grained or organic lenses with palaeoenvironmental potential to be preserved.
230. Brickearth is present in the northern and southern parts of the onshore cable corridor(s) and while its archaeological and palaeoenvironmental potential is largely unknown, there is evidence for preservation of archaeological (including mammalian) remains within similar deposits at Wrabness and Holbrook Bay located to the north of the onshore cable corridor(s).
231. Alluvium is of geoarchaeological interest as it may contain or partially mask Holocene archaeological features and/or layers, preserve palaeochannels and

contain peat or richly-organic units that have high palaeoenvironmental potential. Alluvium was recorded during geoarchaeological monitoring of GI boreholes at the proposed landfall of the Five Estuaries Offshore Wind Farm (Appendix 25.9, Volume III). The alluvium comprised an upper and lower minerogenic unit, separated by a peat ranging in thickness from 0.5 to 1.5m. The confirmed presence of alluvium and peat within the Holland Haven Marshes indicates there is high potential for deposits with a perceived heritage importance of high to be present at the possible landfall location. Although not proven by legacy borehole data, alluvium is likely to be present on the floodplain of the Tendring Brook towards the centre of the onshore cable corridor(s) (northeast of Tendring), and towards the north, in the area of Holland Brook (close to Horsley Cross).

232. Deposit modelling along the onshore cable corridor(s) indicates there is some potential for Head and Colluvium to be present, particularly near the base of slopes. These deposits have potential to include eroded or redeposited archaeological material, or to seal underlying layers of archaeological interest (e.g. buried soil horizons).
233. Results from a priority geophysical survey near Little Bromley located across the onshore substation zone identified a series of ditch and water channel features interpreted as superficial geology (Appendix 25.8, Volume III). Little Bromley is located in a geoarchaeological character zone characterised by Head/Colluvium and Brickearth, overlying Pleistocene fluvial deposits. There are no modern watercourses in this area, which is characterised by relatively high, flat ground.
234. Across the Tendering peninsular there is evidence of patterned ground which is a phenomena that occurs in cold climates when physical processes such as freezing and thawing move sediment, washing fine grained material down and bringing coarser gravel to the surface (Essex County Council and Tendring District Council, 2009). This is most common on flat ground where Brickearth overlies sands and gravels as is expected in the Little Bromley area. Therefore, the features observed in the geophysical survey may be patterned ground and represent a landscape that formed during the last cold stage, approximately 15,000-20,000 years ago.

25.5.12 Future trends in baseline conditions

235. In the event that North Falls is not developed, an assessment of the future conditions for onshore archaeology and cultural heritage has been carried out and is described within this section.
236. The historic environment is vulnerable to the effects of climate change. Changes to environmental conditions have the potential to alter the range of flora and fauna within the environment, thereby potentially changing the inherent character of historic and designated landscapes and affecting historic building materials (e.g. fungal / plant growth and insect infestation due to the effects of global warming). Extremes in temperature and cycles of wetting and drying as a result of climate change can also damage historic buildings, landscapes and buried archaeological remains, variously as a result of soil saturation and shrinkage and changes to soil chemistry. Waterlogged archaeological and

palaeoenvironmental remains are particularly vulnerable in this regard, with the desiccation of soils and lowered groundwater levels potentially increasing the risk of decay to such remains, if and where present. These damaging cycles create stressful environments for buried archaeology, with preservation in situ becoming increasingly difficult. Given that heritage assets, and the contexts in which they survive vary, it follows that multiple factors may affect their survival, stabilisation or decay. On this basis, broad-scale strategies to safeguard the historic environment from the effects of climate change are therefore difficult to determine, with no one single solution available.

237. Elements of climate change considered to be of particular relevance to the onshore project area include those associated with sea level changes and erosion, which have the potential to damage and de-stabilise coastal heritage assets. In particular, increased frequency and severity of storms, coupled with sea level rise, will likely impact coastal heritage assets and in the medium to long-term, sea-level rise is likely to drive a very significant change.
238. The sub-surface archaeology which is exposed, investigated and recorded to professional standards may, however, be considered a public benefit in terms of understanding of and building upon the archaeological record, and certainly preferable to assets and remains being lost altogether.

25.6 Ongoing and forthcoming programmes of assessment and survey

239. In order to further inform the onshore archaeological and cultural heritage baseline environment, the following programmes of assessment and survey are anticipated to inform the archaeological mitigation strategy.

25.6.1 Below Ground Archaeology

240. The priority archaeological geophysical survey is ongoing and will continue into 2023 with the aim of covering as much of the onshore project area as feasible. The results from the survey will also inform the final DCO application.
241. The information gained from these non-intrusive evaluation surveys will inform a programme of intrusive evaluation investigations (e.g., trial trenching). The primary purpose of programmes of intrusive evaluation will be to ground-truth and further identify areas of archaeological interest, in order to confirm the exact locations of any buried archaeological features which may be extant within the onshore project area, as indicated by the previous non-intrusive survey methods.
242. The information attained from these investigations will inform decisions regarding the archaeological mitigation strategy for North Falls so that the historic environment resource can be safeguarded in a manner that is efficient, appropriate and proportionate to the significance of the archaeological remains present. Post-consent survey commitments in this regard will be detailed in a project-specific Outline WSI prepared in agreement with the relevant regulators and submitted as part of the final DCO application.

25.6.2 Geoarchaeological and Palaeoenvironmental Remains

243. Additional mitigation with respect to geoarchaeological / palaeoenvironmental remains will likely commence with a programme of geoarchaeological monitoring of engineering-led GI works with a view to identifying the presence / absence of palaeoenvironmental and geoarchaeological remains / deposits. The results of this assessment will include recommendations for any further geoarchaeological assessments / approaches considered necessary. This will ultimately inform a project-wide approach to geoarchaeological assessment / palaeoenvironmental survey which will be established in the post-consent stages of the Project, to be set-out as part of the mitigation measures and strategies in the Outline WSI submitted as part of the final DCO application.

25.6.3 The Setting of Heritage Assets

244. The initial setting assessment undertaken to date and presented in this chapter addresses Step 1 of Historic England's guidance on the Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (Historic England, 2017a), which identifies the heritage assets affected and their settings. A number of heritage assets located in the vicinity of the onshore substation zone have also been subject to a preliminary assessment with respect to Step 2 of the approach, which assesses whether, how and to what degree setting makes a positive contribution to the significance of the heritage assets in question (Appendix 25.3, Volume III). This work is ongoing.
245. It is anticipated that a number of additional site visits will take place prior to the submission of the DCO application to further inform the additional stages of the heritage setting assessment. The site visits and assessment undertaken to date were devised with the purpose of facilitating a sufficiently early understanding of the designated heritage assets to enable any potential changes in setting from the proposed above ground infrastructure to be adequately identified in this chapter. This approach has also facilitated the identification of heritage assets considered to require further heritage setting considerations specific to the onshore project area.
246. Additional site visits are intended to supplement and build upon this assessment further within the final DCO application, in conjunction with available LVIA and SLVIA toolkits. It is anticipated that these additional survey and assessment measures will enable the significance of effect of any change in the setting of heritage assets arising from North Falls to be further determined, thereby informing decisions regarding appropriate mitigation measures which seek to reduce (or offset) any identified impacts to a non-significant level.

25.7 Assessment of significance

25.7.1 Potential effects during construction

247. This section outlines potential impacts as a result of North Falls, their likely magnitude and the resulting significance of any effects when compared against the heritage importance of assets assessed, using the assessment methodology described in Section 25.4.3.
248. A range of potential impacts may occur to onshore archaeology and cultural heritage assets as a result of changes during the construction, operation and decommissioning of North Falls. North Falls has the potential to impact upon the historic environment resource in a number of ways, through direct (physical) changes, indirect (physical) changes, and indirect (non-physical) changes to the setting of heritage assets. Some impacts and changes would be temporary and others permanent, some confined to the construction stages and others more permanent during operation and the lifespan of North Falls, and subsequent decommissioning. A summary of all potential impacts identified for onshore archaeology and cultural heritage is provided in Section 25.13.
249. Direct (physical) impacts, as stated in the NPS EN-3 (DECC 2011b: 49) and the draft revised NPS (BEIS, 2021c), encompass direct effects from the physical siting of the DCO order limits. Potential direct impacts thus comprise both direct damage to archaeological deposits and material and the disturbance or destruction of relationships between deposits and material and their wider surroundings. This may include buried archaeological remains. Consequently, all aspects of North Falls which involve intrusive groundworks have the potential to affect heritage assets with archaeological interest (e.g., buried archaeological remains) through direct physical change.
250. North Falls also has the potential to interact with local hydrological processes which in turn may result in impacts of an indirect (physical) nature occurring upon buried archaeological deposits through either desiccation or waterlogging.
251. Indirect (non-physical) impacts on the historic environment, as stated in NPS EN3 (DECC 2011b: 67), include heritage assets being affected by change in their setting. Indirect (non-physical) impacts upon significance as a result of change in the setting of heritage assets have the potential to occur throughout the lifetime of North Falls, thus encompassing all phases, from construction, into operation and subsequent decommissioning. Indirect non-physical impacts upon the setting of heritage assets are most relevant as a result of the presence of above ground infrastructure for North Falls during the operational phase, effects of which may be long-term or 'permanent' in nature. Indirect non-physical impacts upon the setting of heritage assets may also arise as a result of construction and decommissioning works, although effects would be, by comparison, shorter in duration and of a temporary nature.
252. The impact assessment as presented in this chapter assumes that activities associated with construction may theoretically occur anywhere within the onshore project area.
253. As such heritage assets will not be considered as single, individual receptors as part of an asset-by-asset approach. Instead, for the purposes of this chapter, designated and non-designated heritage assets have been grouped. The

following broad groups will apply and be taken forward into the impact assessment:

- Below ground archaeology:
 - Areas of possible archaeological interest (including designated and non-designated buried archaeological heritage assets) (ranging between anticipated low and high, as a worst case, heritage importance);
 - Unknown potential buried archaeological remains (precautionary high heritage importance until evidenced otherwise); and
 - Geoarchaeological and palaeoenvironmental deposits (precautionary medium heritage importance until evidenced otherwise).
- Above ground archaeology/built heritage assets:
 - Designated heritage assets (high heritage importance); and
 - Areas of possible archaeological/cultural heritage interest (including non-designated above ground archaeology and cultural heritage assets, e.g., earthworks and standing structures) (ranging between anticipated low and medium, as a worst case, heritage importance).

25.7.1.1 Impact 1: direct physical impact on (permanent change to) designated heritage assets

254. Impacts resulting in potential effects as part of the construction work are those associated with intrusive groundworks, including:
- The removal of topsoil across the onshore project area;
 - Open cut trenching as part of the onshore cable installation works;
 - The excavation of jointing bays, HDD launch/reception pits and link boxes along the onshore cable corridor(s);
 - Groundworks associated with the onshore cable corridor(s) easement and associated access trackways;
 - Vibration from HDD drilling and other intrusive groundworks; and
 - Accidental damage from plant movement and other construction traffic.
255. Any direct (physical) impact to designated heritage assets (and their associated heritage significance) should be weighed against the public benefit of development, recognising that the greater the harm to the significance of the heritage asset the greater the justification would be needed for any loss (EN-1, paragraph 5.8.15). Any direct (physical) impact would likely be permanent and irreversible. If disturbed or removed without an appropriate record having been made, their context and relationship to other heritage assets is partially or completely lost and their heritage significance is as such likely to be reduced.
256. The onshore project area avoids all known (e.g., Conservation Areas, Scheduled Monuments, Listed Buildings, etc.) designated heritage assets and as such, no direct physical impacts are anticipated to occur to designated heritage assets (Section 25.5.2).

257. As discussed in Section 25.5.2, the southernmost extent of Frinton Conservation Area is included within the northern extent of the landfall search area. However, it is highly unlikely that any construction works associated with the landfall will take place within this area, and it should be noted that the onshore project area will be further refined to a smaller area for the final DCO application.

25.7.1.2 *Impact 2: direct physical impact on (permanent change to) non-designated heritage assets (including buried archaeological remains, historic earthworks and structures)*

258. Impacts resulting in potential effects as part of the construction work are those associated with intrusive groundworks, including:

- The removal of topsoil across the onshore project area;
- The excavation of transition joint bays at the landfall;
- The use of HDD at the landfall;
- Open cut trenching as part of the onshore cable installation works;
- The excavation of jointing bays, HDD launch/reception pits and link boxes along the onshore cable corridor(s);
- Groundworks associated with the onshore cable corridor(s) easement and associated access trackways;
- Groundworks associated with the onshore substation;
- Vibration from HDD drilling and other intrusive groundworks; and
- Accidental damage from plant movement and other construction traffic

259. Any adverse impacts (and associated effects) upon sub-surface archaeological remains, geoarchaeological / palaeoenvironmental deposits, and above ground heritage assets due to construction-related works would likely be permanent and irreversible in nature. Once archaeological deposits and the relationships between deposits, material and their wider surroundings have been damaged or disturbed, it is not possible to reinstate or reverse those changes. As such, direct physical impacts to an asset's fabric (where elements lost contribute to heritage significance) can represent a total loss of an asset's heritage significance, or parts of it, and the character, composition or attributes of the asset may be fundamentally changed or lost from the site altogether.

260. A staged programme of assessment has commenced with a view to building upon an understanding of potential archaeological remains and their likely heritage significance in the study areas and more specifically within the onshore project area. This approach to date has identified a number of areas of possible archaeological and geoarchaeological interest, which have been assigned initial predicted heritage significance levels between low and high. Those considered to be most vulnerable with regard to the various elements of construction are highlighted below. However, it should be borne in mind that the assessments and surveys being progressed (Section 25.6) will further inform the nature and extent of any features present and have the potential to alter the perceived heritage significance of assets encountered.

261. It should also be emphasised that the potential for buried archaeological remains, geoarchaeological / palaeoenvironmental remains, and above ground heritage assets, not currently represented by the desk-based data, to be affected as a result of construction works should not be discounted. In the absence of further data regarding the 'potential' archaeological resource, such assets must be considered as potentially having a high perceived heritage significance.
262. Extant earthworks and field boundaries are an integral part of the HLC and the Tendring District Historic Environment Characterisation. Any loss of such features arising as a result of construction-related activities therefore has the potential to impact upon an integral part of the HLC across Tendring within the onshore project area and wider surrounds. This change to the HLC arising from the potential loss of above ground features is also discussed below.

Landfall Search Area

263. Construction activities within the landfall search area that have the potential to directly (physically) impact buried archaeological and geoarchaeological / palaeoenvironmental remains, and above ground heritage assets, are those associated with the HDD works, cable trenching, installation of the landfall HDD compound, and groundworks associated with transition joint bay installation.
264. Data available and assessed to date (as part of this assessment) within the landfall search area indicates a predominance of features associated with the coastal defence network of the World Wars (particularly those of the WWII) and from the 19th century (see Section 25.5.3, Table 25.11). It is possible that sub-surface remains relating to these features exist within the landfall search area. Below ground features associated with the two World Wars are likely to be of low to medium heritage importance.
265. Four pillboxes have been identified within the landfall search area as above ground archaeological remains, alongside the site of copperas settling pans and a circular earthwork (see Table 25.12). Based on information available to date, these heritage assets are assigned a low to medium heritage importance.
266. The landfall search area also contains numerous records of multi-period findspots, although predominantly prehistoric in date, and numerous areas of cropmarks, which could potentially indicate the presence of buried archaeological remains of earlier date (see Section 25.5.3, Table 25.11). Due to the uncertainty of the heritage significance of these findspots in the absence of further assessment and survey, these assets are assigned a precautionary low to medium heritage importance.
267. The landfall search area is also likely to contain alluvium which is of geoarchaeological interest as it may contain or partially mask Holocene archaeological features and/or layers, preserve palaeochannels and contain peat or richly-organic units that have high palaeoenvironmental potential.
268. With regard to the HLC and the Tendring District Historic Environment Characterisation (see Appendix 25.1 and 25.2, Volume III), the areas mapped as agricultural landscape, marshland, and floodplain within the landfall search area will experience a temporary level of change to their historic landscape character during construction.

Onshore Cable Corridor(s)

269. Construction activities within the onshore project area that have the potential to directly (physically) impact buried archaeological and geoarchaeological / palaeoenvironmental remains and above ground heritage assets are those associated with topsoil removal, open cut trenching and the excavation of joints bays, HDD pits and drilling, link boxes, and groundworks associated with the onshore cable corridor(s) easement and access trackways.
270. Data available and assessed to date within the onshore cable corridor(s) element of the onshore project area indicates the potential presence of sub-surface archaeological remains of varying type. Due to the extent of the onshore cable corridor, the large number of possible areas of archaeological interest currently identified and the inability to accurately ascertain the presence / absence, nature and extent of the potential buried remains within it, it is not possible at this stage of enquiry to identify each and every heritage asset representative of below ground archaeology that may be impacted by construction works associated with final DCO boundary.
271. Areas of notable features within the onshore project area are presented in Section 25.5.3, Table 25.11. These areas have been variously assigned a low to high perceived heritage importance based on information available to date.
272. In addition to areas of potential buried archaeological remains, two areas representative of above ground archaeological remains have been identified from aerial imagery within the onshore project area (see Table 25.12). Based on information available to date, these heritage assets are assigned a low to high heritage importance.
273. With respect to the potential presence of geoarchaeological / palaeoenvironmental remains, alluvium is likely to be present at Holland Haven Marshes towards the south of the onshore cable corridor(s), on the floodplain of the Tendring Brook towards the centre of the onshore cable corridor(s) (northeast of Tendring), and towards the north, in the area of Holland Brook (close to Horsley Cross). As noted above, alluvium is of geoarchaeological interest.
274. Pleistocene fluvial deposits are expected to be present along much of the onshore cable corridor(s). There is moderate to high potential for Lower to Middle Palaeolithic archaeology and faunal remains to be present within these deposits, or for fine-grained or organic lenses with palaeoenvironmental potential to be preserved.
275. Brickearth is present in the northern and southern parts of the onshore cable corridor(s) and while its archaeological and palaeoenvironmental potential is largely unknown, there is evidence for preservation of archaeological (including mammalian) remains within similar deposits at Wrabness and Holbrook Bay located to the north of the onshore cable corridor(s).
276. The HLC and Tendring District Historic Environment Characterisation within the majority of the onshore project area will experience a temporary level of change to an integral part of the historic landscape character across Tendring during construction, as will the more discrete character areas across onshore project area.

Onshore Substation Zone

- 277. Construction activities at the onshore substation that have the potential to directly (physically) impact buried archaeological remains are those associated with groundworks, piling and landscape planting.
- 278. Data available and assessed to date for the onshore substation zone includes extensive cropmarks of a Roman road, field systems, trackways, ring ditches and several enclosures of Romano-British date (see Table 25.11). Some of these cropmarks and assets have been further confirmed by geophysical survey (see Section 25.5.4). This area has been assigned a medium to high level of perceived heritage importance based on information available to date.
- 279. The onshore substation zone is located in a geoarchaeological character zone characterised by Head/Colluvium and Brickearth, overlying Pleistocene fluvial deposits. The priority geophysical survey across the onshore substation zone identified a series of ditch and water channel features interpreted as superficial geology; these features may be patterned ground and represent a landscape that formed during the last cold stage, approximately 15,000-20,000 years ago.

25.7.1.2.1 Magnitude of impact

- 280. Any direct physical impacts on the significance of buried archaeological and geoarchaeological / palaeoenvironmental remains, and above ground heritage assets are often considered to be of high magnitude. However, the extent of any impact will often depend on the presence, nature and depth of any such remains, in association with the depth of construction-related groundworks, as well as the specific elements, aspects or areas of the asset subject to impact (including the level to which these may or may not contribute to heritage significance). As such, a reduced magnitude of impact may be relevant where the anticipated interaction between the proposed groundworks and the potential sub-surface archaeological remains (as indicated by available data) is considered to be unlikely or limited in terms of impact upon the asset's heritage significance. The magnitude of direct physical impacts on buried archaeological remains during the construction phase could therefore range from negligible to high.

Landfall Search Area

- 281. In the absence of a refined landfall compound area, direct physical impacts to potential below ground archaeological remains as part of construction works within the landfall search area could represent up to a high magnitude of impact.
- 282. In the absence of a refined landfall compound area and uncertainty regarding the nature, extent and depth of any alluvial deposits, direct physical impacts to potential geoarchaeological / palaeoenvironmental remains from construction works could represent up to a high magnitude of impact.
- 283. In the absence of a defined landfall compound area, direct physical impacts to above ground heritage assets as part of construction works within the landfall search area have the potential to result in a high magnitude of impact.

Onshore Cable Corridor(s)

- 284. It is possible that direct physical impacts to potential below ground archaeological remains as part of construction works within the onshore cable corridor(s) could result in a high magnitude of impact.

- 285. Deposits of geoarchaeological interest and palaeoenvironmental potential are likely to be present within the onshore cable corridor(s), although the extent and depth of these deposits is currently unknown, construction works could result in up to a high magnitude of impact.
- 286. Direct physical impacts to above ground archaeological remains as part of construction works within the onshore project area have the potential to result in impacts of high magnitude.

Onshore Substation Zone

- 287. It could be possible that direct physical impacts to potential below ground archaeological remains as part of construction works within the onshore substation zone could result in a high magnitude of impact.
- 288. Direct physical impacts to deposits of geoarchaeological interest and palaeoenvironmental potential from the construction works within the onshore substation zone have the potential to result in impacts of high magnitude.
- 289. Direct physical impacts to historic hedgerows classed as 'Important Hedgerows' as part of construction works within the onshore substation zone have the potential to result in impacts of high magnitude (if removed within their entirety).

25.7.1.2.2 Significance of effect

Landfall Search Area

- 290. Construction works within the landfall search area have the potential to result in effects of major adverse significance to potential below ground archaeological and geoarchaeological / palaeoenvironmental remains, and extant above ground heritage assets (in certain instances, prior to site specific mitigation), based upon the realistic worst case.

Onshore Cable Corridor(s)

- 291. In the absence of additional mitigation, direct physical impacts to areas of possible archaeological interest assigned a heritage importance of medium and above could result in an effect of major adverse significance, based upon a realistic worst case scenario. In the absence of additional mitigation, direct impacts to areas of possible archaeological interest assigned a low heritage importance could result in an effect of moderate adverse significance, based upon a realistic worst case scenario.
- 292. In the absence of additional mitigation, direct physical impacts to deposits of geoarchaeological interest and palaeoenvironmental potential which have a perceived heritage importance of medium to high could result in an effect of major adverse significance, based upon a realistic worst case scenario.
- 293. Construction works within the onshore project area have the potential to result in effects of major adverse significance on identified earthworks assigned a medium heritage importance and effects of a moderate adverse significance to those assets assigned a low heritage importance, based on the realistic worst case scenario.
- 294. The onshore project area also crosses twelve parish boundaries and one protected lane. Any hedgerows associated with these boundaries are classed as "Important Hedgerows" and are therefore considered to be heritage assets

of medium heritage importance (as a likely highest level of heritage importance). Prior to mitigation, groundworks have the potential to result in a low magnitude of impact upon any such hedgerows (where present, given the limited interaction between the boundaries and the onshore cable corridor(s)), resulting in an effect of minor adverse significance, as a likely worst case scenario.

Onshore Substation Zone

295. In the absence of additional mitigation, all direct physical impacts within the onshore substation zone where areas of possible archaeological interest have been assigned a heritage importance of medium to high could result in an effect of major adverse significance, based upon a realistic worst case scenario.
296. In the absence of additional mitigation, direct physical impacts to deposits of geoarchaeological interest and palaeoenvironmental potential which have a perceived heritage importance of medium to high could result in an effect of major adverse significance, based upon a realistic worst case scenario.
297. No above ground archaeological remains or heritage assets are currently recorded or identified within the onshore substation zone based on data available to date. As such, there will be no effect from construction works within the onshore substation zone upon above ground heritage assets.
298. The onshore substation zone will represent a permanent / long-term change to the historic character of the landscape, which is mapped as an area with high density of cropmarks that has long been the subject of human occupancy and activity, as well as field boundaries historically focused on surrounding farmsteads and the settlement of Great Bromley.
299. The onshore substation zone may include historic hedgerows that would be classed as “Important Hedgerows” and are therefore considered to be heritage assets of medium heritage importance (as a likely highest level of heritage importance). Prior to mitigation, groundworks have the potential to result in a high magnitude of effect upon any such hedgerows (where present), resulting in an impact effect of major adverse significance, as a likely worst case scenario.

25.7.1.2.3 Additional mitigation

300. North Falls have committed to undertake additional programmes of survey and evaluation where of relevance to sub-surface archaeological remains, which may include any outstanding geophysical survey and a scheme wide programme of trial trenching. This strategy will be outlined as part of a project-specific Outline WSI, submitted with the final DCO application. The survey and evaluation work may indicate the presence of previously unknown buried archaeology (and further verify previously known / anticipated buried remains as indicated by the previous non-intrusive survey methods), enabling the resource to be appropriately addressed by means of mitigating any impacts in a manner that is proportionate to the significance of the remains present.
301. Archaeological mitigation is envisaged to comprise a combination of the following recognised standard approaches:
 - Further advance and enacting of preservation in situ options and requirements (e.g., avoidance / micro-siting / HDD etc., where possible);

- Archaeological excavation: including subsequent post-excavation assessment, and analysis, publication and archiving;
 - Archaeological monitoring / watching brief: including subsequent post-excavation assessment, and analysis, publication and archiving (where appropriate); and
 - Earthwork condition surveys: including subsequent reporting and archiving (followed by backfilling and reinstatement, where required on a case-by-case basis).
302. Further evaluation of potential geoarchaeological / palaeoenvironmental remains is likely to include a programme of geoarchaeological monitoring of engineering-led GI works to inform mitigation approaches such as geoarchaeological assessment and palaeoenvironmental survey.
303. Impact to the HLC (including hedgerows and parish boundaries) will be minimised by returning field boundaries / areas / hedgerows to their pre-construction condition and character post-construction, as part of a sensitive programme of backfilling and reinstatement / landscaping. Certain hedgerows and field boundaries (e.g., parish boundaries) may require recording prior to the construction process and enhanced provisions made during reinstatement.
304. The site-specific measures adopted by North Falls will be determined post-consent as the Project progresses in a specific and bespoke manner, tailored on a case-by-case / area-by-area basis (as required) accordingly and in response to the combination of onshore archaeological and cultural heritage assessment. Opportunities to optimise the programme, including expedient commencement of archaeological work in the immediate post-consent stages will also be sought in ongoing discussion and agreement with the ETG.
305. The preferred and optimum mitigation measure is preservation in situ, wherever possible. By avoiding sub-surface archaeological remains (sites / features), either largely or in their entirety (as indicated by existing and available data), the magnitude of impact may be reduced depending on the extent of the site / feature in question (with reference to change or impact upon heritage significance) and the degree to which preservation in situ has been applied.
306. Where avoidance is not possible, significant impacts upon sub-surface archaeological remains may potentially, to a degree, be off-set by the application of appropriate alternative mitigation measures which serve to preserve archaeological remains, where present, by record (e.g., following intrusive evaluation and subsequent excavation, where required).

25.7.1.2.4 Residual significance of effect

307. Although preservation by record cannot be considered to reduce the magnitude of impact (and associated significance of effect) per se, given the physical loss of a given asset, the acquisition of a robust archaeological record of an asset may be considered to adequately compensate identified, recognised and acceptable harm to a heritage asset in line with industry standard good practice mitigation measures and compatible with the definitions outlined in Section 25.4.3.
308. With the application of mitigation through preservation by record, it is anticipated that the residual magnitude and significance of effect will be reduced or offset

to levels considered non-significant in EIA terms (i.e., anticipated to be no worse than a minor adverse significance of effect for Impact 2).

309. The application of mitigation by preservation in situ would result in no impact.

25.7.1.3 Impacts 3 and 4: indirect physical impact on (permanent change to) designated and non-designated heritage assets

310. Potential indirect impacts to designated and non-designated heritage assets from changes to ground conditions is assessed with reference to Chapter 21 Water Resources and Flood Risk (Volume I).
311. Construction activities undertaken as part of the Project have the potential to effect below ground deposits of archaeological and geoarchaeological interest over a wider area than that of the footprint of the Project, for example, through hydrological changes that may cause desiccation and drying out of wetland deposits and associated preserved waterlogged archaeological or geoarchaeological remains.
312. Areas which contain deposits of geoarchaeological interest (based on available data) have been identified by a geoarchaeological desk-based assessment (Appendix 25.6, Volume III). This approach has identified a number of areas of possible geoarchaeological and palaeoenvironmental interest, which have been assigned a precautionary medium heritage importance (until evidenced otherwise).
313. In addition to potential changes to ground conditions, potential indirect impacts to designated and non-designated heritage assets could occur as a result of vibration from groundworks affecting the fabric of a heritage asset. This is assessed with reference to Chapter 26 Noise and Vibration (Volume I).
314. With respect to non-designated heritage assets which could be affected by vibration; these range from a level of low to high heritage importance (Table 25.11 and Table 25.12).

25.7.1.3.1 Magnitude of impact

315. As the presence / absence, nature and extent of deposits of geoarchaeological and palaeoenvironmental interest is currently unknown (or not fully established) within the onshore project area, it is not possible to identify potential impacts according to the various elements of construction. As a worst case scenario, it is anticipated that any indirect impact could result in a medium adverse magnitude of impact.
316. Potential for vibration from groundworks affecting the fabric of a heritage asset (both designated and non-designated) could occur through the operation of the HDD and ancillary equipment or piling works at the onshore substation (if required) taking place within the onshore project area. Any vibration created during the construction phase could have an indirect physical impact upon heritage assets. The operation of the HDD and ancillary equipment or piling works at the onshore substation (if required) would produce the greatest vibration impacts along the onshore cable corridor(s) and onshore substation zone.
317. The vibration effects from the operation of the HDD and ancillary equipment / piling at the onshore substation (if required) within the onshore cable corridor(s) is assessed within Chapter 26 Noise and Vibration (Volume I) as being of no

greater than negligible magnitude of impact. Therefore, the magnitude of impact from vibration effects upon non-designated heritage assets is no greater than negligible. There is considered to be no vibration effects upon designated heritage assets as these are avoided by the onshore project area.

25.7.1.3.2 Significance of effect

318. In accordance with the significance of effect matrix (Table 25.9) without mitigation, should impacts occur from changes to hydrological processes, the significance of effect could be moderate adverse.
319. In accordance with the significance of effect matrix (Table 25.9) without mitigation, should impacts occur from vibration effects, the significance of effect could be minor adverse. No additional mitigation measures are proposed.

25.7.1.3.3 Additional mitigation

320. The potential for the Project to encounter currently unrecorded geoarchaeological/ palaeoenvironmental remains will be mitigated by means of implementing additional mitigation measures and commitments (set out in a project-specific Outline WSI submitted with the final DCO application), which will include reference to a project-wide approach to geoarchaeological assessment/ palaeoenvironmental survey, which will be established in the post-consent stages.

25.7.1.3.4 Residual significance of effect

321. With the application of mitigation through preservation by record of geoarchaeological/ palaeoenvironmental remains, it is anticipated that the residual magnitude of impact and significance of effect can be reduced or offset to levels considered non-significant in EIA terms (i.e. anticipated to be no worse than a minor adverse significance of effect).

25.7.1.4 *Impacts 5 and 6: temporary change to the setting of heritage assets (both designated and non-designated) which could affect their heritage significance*

322. Initial review of the designated heritage assets located in proximity to the onshore project area and therefore potentially susceptible to a temporary change to their setting include the following assets:
- Great Holland Lodge (NHLE 1337116 – Grade II Listed Building);
 - Church of All Saints (NHLE 1165610 – Grade II* Listed Building);
 - Great Holland Conservation Area;
 - Ring Cottage and Tudor Cottage (NHLE 1317222 – Grade II Listed Building);
 - Great Holland Mill House (NHLE 1111532 – Grade II Listed Building);
 - Thorpe-le-Soken Conservation Area;
 - Barker's Farmhouse (NHLE 1322630 – Grade II Listed Building);
 - Hempstall's Farmhouse (NHLE 1240504 – Grade II Listed Building); and
 - Church of St Mary (NHLE 1337175 – Grade II Listed Building).
323. These designated heritage assets have a medium to high level of importance.

25.7.1.4.1 Magnitude of impact

324. Activities undertaken as part of construction works for North Falls have the potential to impact designated and non-designated heritage assets through a temporary change in their setting which may affect their heritage significance. Temporary changes in the setting of heritage assets, should they occur, may do so (for example) through the presence of machinery, construction traffic and general construction activities taking place within and adjacent to the onshore project area. The sight, sound, any dust created, and even smell, during the construction phase has the potential to temporarily change the setting of heritage assets and their associated heritage significance.
325. Any impact during construction would be short term and reversible. It is therefore considered that any change to setting and associated heritage significance would result in a low adverse magnitude of impact.

25.7.1.4.2 Significance of effect

326. In accordance with the significance of effect matrix (Table 25.9) without mitigation, should impacts occur from changes to setting from North Falls, these have the potential to be of moderate adverse significance, as a worst case scenario.

25.7.1.4.3 Additional mitigation

327. During construction, the movement of construction traffic and machinery will be temporary and localised. The removal of hedgerows and trees will be avoided where possible. On completion of construction, the onshore cable route will be fully reinstated to its previous condition. No above-ground infrastructure will remain, other than manholes for link boxes located up to one every 500m along the onshore cable route. Hedgerows or trees will not be replanted directly over the buried cables. A landscape scheme will be developed to secure the restoration and, where possible, enhancement of the landscape post-construction.

25.7.1.4.4 Residual significance of effect

328. The reinstatement of the landscape will help reduce the magnitude of impact from low to negligible. Therefore, the residual effect is minor adverse (as a worst case scenario), which is considered non-significant in EIA terms.

25.7.2 Potential effects during operation

329. During operation, it is expected that there will be no further requirement for land to be disturbed or excavated, except in the event that onshore cables require repair or maintenance. However, these activities would not extend beyond the construction footprint, and would be relatively rare and localised in occurrence. As such, direct and indirect physical impacts to both designated and non-designated heritage assets during operation have been scoped out of further assessment. This was agreed at the scoping stage with PINS (Table 25.1).
330. The presence of permanent above ground onshore and offshore infrastructure could, however, have an effect on heritage significance as a result of change in the setting of heritage assets due to the presence of new, permanent above ground onshore and offshore infrastructure associated with North Falls being introduced to (and present within) the landscape and seascape, respectively.

25.7.2.1 Impacts 7 and 8: permanent change to the setting of heritage assets (both designated and non-designated) which could affect their heritage significance

- 331. The heritage assets which may be subject to a change in setting affecting their heritage significance, due to the presence of the onshore and offshore infrastructure, and which require further assessment, have been identified within Appendix 25.3 and Appendix 25.4 (Volume III), respectively.
- 332. The heritage assets identified have a medium to high level of heritage importance.
- 333. An initial settings assessment and screening exercise following Historic England guidance has commenced and is ongoing and will be reported on in full within the ES in support of the DCO application. The next steps leading towards the ES will be to utilise available LVIA and SLVIA tools such as ZTVs and photomontages, particularly in relation to the refined onshore substation and offshore infrastructure, and to undertake further site visits and further assessment, where required.
- 334. Collaborative workshops have been undertaken with the LVIA consultants with the aim to define specific heritage viewpoints to capture photomontages in order to inform the settings assessment for the permanent onshore infrastructure. The heritage viewpoints identified and presented in Appendix 25.3 (Volume III) have been agreed in consultation with the ETG.
- 335. Further work to identify and agree (with the ETG) the relevant heritage specific viewpoints from potentially affected coastal heritage assets where a change to their setting (and associated heritage significance) may occur from the presence of the offshore infrastructure is still required. This will be undertaken to inform a full setting assessment and presented in the ES in support of the DCO application.

25.7.2.1.1 Magnitude of impact

- 336. The presence of permanent above ground (visible) infrastructure could have an ongoing impact on the setting of heritage assets for the duration of the operation phase as a result of the onshore substation and the offshore wind turbines, and their day to day use.
- 337. For effects arising from the onshore substation, as highlighted above, the setting assessment work is ongoing, however, in the absence of a confirmed final design for the onshore substation, the magnitude of impact upon the identified heritage assets as a result of a change to their setting affecting their heritage significance could be medium adverse, as a worst case scenario.
- 338. For effects arising from the offshore infrastructure, As highlighted above the setting assessment work is ongoing, however, in the absence of a confirmed final design (for DCO submission) for the offshore infrastructure, the magnitude of impact upon the identified heritage assets as a result of a change to their setting affecting their heritage significance could be low adverse, as a worst case scenario.

25.7.2.1.2 Significance of effect

- 339. For effects arising from the onshore substation, in accordance with the significance of effect matrix (Table 25.9) without mitigation, should effects occur

from changes to setting from the onshore substation, these have the potential to be of major adverse significance, as a worst case scenario.

340. For effects arising from the offshore infrastructure, in accordance with the significance of effect matrix (Table 25.9) without mitigation, should effects occur from changes to setting from the offshore infrastructure, these have the potential to be of moderate adverse significance, as a worst case scenario.

25.7.2.1.3 Additional mitigation

341. The onshore substation will be designed to reduce the overall height and massing of associated structures and other elements as far as possible. Landscape proposals will include measures for the enhancement of local biodiversity during the operational phase of the onshore substation. This will include landscape screening of the onshore substation through hedgerow and woodland planting. Once matured, this will help to integrate the onshore substation into the existing landscape of arable fields and boundary trees/hedgerows. Further detail on the principles of mitigation are set out in Chapter 30 Landscape and Visual Impact Assessment (Volume I).
342. The layout of the offshore wind turbines will be designed appropriately to minimise visual affects, taking into account other constraints such as ecological effects, safety reasons or engineering and design parameters. The final design of North Falls will be confirmed through detailed engineering design studies that will be undertaken post-consent based on the findings of pre-construction surveys (Chapter 29 Offshore Seascape, Landscape and Visual Impact Assessment, Volume I).

25.7.2.1.4 Residual significance of effect

343. While the mitigation measures will likely reduce the magnitude of impact, the residual significance of effect can only be determined following the provision of a detailed mitigation plan.

25.7.3 Potential effects during Decommissioning

344. No decision has been made regarding the final decommissioning policy for North Falls as it is recognised that industry best practice, rules and legislation change over time. The detailed decommissioning activities and methodology would be determined later within the Project's lifetime so as to be in line with latest and current guidance, policy and legislation at that point. At that juncture, the decommissioning methodology would be agreed with the relevant authorities and statutory consultees. Onshore, decommissioning is likely to include removal or reuse of the onshore substation with the cables and jointing bays left in situ or removed.
345. Assuming that provision is made for methods of removal which minimise further impact to the wider area, it is reasonable to assume that any potential damage upon designated and non-designated heritage assets would have already occurred as part of construction activities. However, it is noted that the demolition of buildings and infrastructure can have an impact greater than that of construction e.g., if grubbing out of foundations or remediation of contaminants is required. As such, the worst case scenario with regard to decommissioning cannot be ascertained until the decommissioning plan is finalised.

346. Changes to setting may be present as a result of visual and audible impacts associated with decommissioning activities. Any changes to the setting of heritage assets are considered to be temporary in duration, occurring in association with the decommissioning phase. As such, the worst case scenario as outlined for the construction phase in relation to temporary changes to the setting of heritage assets is unlikely to be exceeded as a result of decommissioning activities.

25.8 Potential monitoring requirements

347. Monitoring requirements for onshore archaeology would be described in the Outline WSI (Onshore) submitted alongside the DCO application and further developed and agreed with stakeholders prior to construction taking account of the final detailed design of North Falls.
348. Direct (physical) impacts would be offset or reduced through either preservation in situ or archaeological fieldwork and reporting, undertaken by professional archaeologists and monitored by Essex County Council Historic Environment Service (Place Services) on behalf of Tendring District Council.

25.9 Cumulative effects

25.9.1 Identification of potential cumulative effects

349. The first step in the CEA process is the identification of which residual effects assessed for North Falls on their own have the potential for a cumulative effect with other plans, projects and activities. This information is set out in Table 25.13. Only potential effects assessed in Section 25.7 as negligible adverse or above are included in the CEA (i.e., those assessed as 'no impact' are not taken forward as there is no potential for them to contribute to a cumulative impact).
350. Table 25.13 concludes that in relation to onshore archaeology and cultural heritage, potential cumulative impacts are likely to arise where the construction phase for two or more projects overlap or where the extent of the archaeological resource intersects two or more projects, or where intervisibility is shared between a heritage asset and two or more developments, should construction and operation run simultaneously.

Table 25.13 Potential cumulative effects

Impact	Potential for Cumulative Effect	Rationale
Construction		
Impact 1: direct physical impact on (permanent change to) designated heritage assets	Yes	Cumulative direct effects arising from two or more projects are possible in an area of overlap or those with an extent which intersects two or more proposed project boundaries (where groundworks are anticipated). Effects may also occur which affect the nature of the heritage resource on a wider scale.
Impact 2: direct physical impact on (permanent change to) non-designated heritage assets	Yes	Cumulative direct effects arising from two or more projects are possible given the level of uncertainty regarding the nature and extent of the potential archaeological resource. Impacts may occur to individual archaeological features (buried or above ground) in an area of overlap or those with

Impact	Potential for Cumulative Effect	Rationale
		an extent which intersects two or more proposed project boundaries (where groundworks are anticipated). Effects may occur which affect the nature of the archaeological resource on a wider scale. Such effects also have the potential to affect the HLC of the study area (e.g., loss of earthworks as a result of one project could affect the HLC as summarised for the purposes of another project).
Impacts 3 and 4: indirect physical impact on (permanent change to) designated and non-designated heritage assets	Yes	Cumulative direct effects arising from two or more projects are possible in an area of overlap or those with an extent which intersects two or more proposed project boundaries (where groundworks are anticipated).
Impact 5 and 6: temporary change in the setting of heritage assets (both designated and non-designated) which may affect their heritage significance	Yes	Cumulative changes in heritage setting arising from two or more projects are possible, particularly in the event that the construction of two or more projects is concurrent and within sight of an individual heritage asset, although additional factors affecting setting may also occur.
Operation		
Impacts 7 and 8: permanent change in the setting of heritage assets (both designated and non-designated) which may affect their heritage significance	Yes	Cumulative changes in heritage setting arising from two or more projects are possible, particularly in the event that the infrastructure of two or more projects occurs within sight of an individual heritage asset, although additional factors affecting setting may also occur.
Decommissioning		
The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. A decommissioning plan will be provided. As such, cumulative effects during the decommissioning stage are assumed to be the same as those identified during the construction stage.		

25.9.2 Other plans, projects and activities

351. The second step in the cumulative assessment is the identification of the other plans, projects and activities that may result in cumulative effects for inclusion in the CEA (described as 'project screening'). This information is set out in Table 25.14, together with a consideration of the relevant details of each, including current status (e.g., under construction), planned construction period, closest distance to North Falls, status of available data and rationale for including or excluding from the assessment.
352. The Project screening has been informed by the development of a CEA project list which forms an exhaustive list of plans, projects and activities within the study area (Section 25.3.1) relevant to North Falls. The list has been appraised, based on the confidence in being able to undertake an assessment from the information and data available, enabling individual plans, projects and activities to be screened in or out.

353. Those projects located more than 1km from the onshore cable corridor(s) and more than 5km from the onshore substation zone are not included in Table 25.14.

Table 25.14 Summary of projects considered for the CEA in relation to onshore archaeology and cultural heritage (project screening)

Project	Status	Construction period	Closest distance from the onshore project area (km)	Confidence in data	Included in the CEA (Y/N)	Rationale
National Infrastructure Planning						
Five Estuaries Offshore Wind Farm	Pre-application	2028 - 2030	Scoping area directly overlaps with North Falls onshore project area.	High	Yes	The onshore project area for Five Estuaries Offshore Windfarm covers largely the same area as NFOW. There is also a possibility that both projects could be constructed at around the same time, therefore, cumulative effects may occur, and may result in impacts of a direct and / or indirect nature upon non-designated heritage assets. There is also the possibility of cumulative effects on heritage setting should the construction periods overlap.
East Anglia GREEN	Pre-application	2027 - 2031	Scoping area directly overlaps with North Falls onshore project area.	High	Yes	The proposed substation area for East Anglia GREEN is in close proximity to North Falls proposed substation zone. Therefore, cumulative effects could occur, and may result in impacts of a direct and / or indirect nature upon non-designated heritage assets. There is also the possibility of cumulative effects on heritage setting should the construction periods overlap.
Essex County Council						
Elmstead Hall, Elmstead, Colchester, Essex	Approved	Information unavailable.	5	N/A	No	In consideration of the type of development proposed and the distance from North Falls, there

Project	Status	Construction period	Closest distance from the onshore project area (km)	Confidence in data	Included in the CEA (Y/N)	Rationale
Elmstead Hall, Elmstead, Colchester, Essex, CO7 7AT	Approved	Information unavailable.	5	N/A	No	would be no potential for direct or indirect physical cumulative effects or potential for cumulative effects on heritage setting.
Elmstead Hall, Elmstead, Colchester, Essex, CO7 7AT	Approved	Information unavailable.	5	N/A	No	
Martell's Quarry, Slough Lane, Ardleigh, Essex, CO7 7RU	Out for consultation	Information unavailable	3	N/A	No	
Land at: Elmstead Hall, Elmstead, Colchester, Essex	Approved	Information unavailable.	5	N/A	No	
Land at Martells Quarry, Slough Lane, Ardleigh, Essex, CO7 7RU	Approved	Information unavailable.	3	N/A	No	
Land at: Martells Quarry, Slough Lane, Ardleigh, Essex, CO7 7RU	Approved	Information unavailable	3	N/A	No	
Land At Martells Quarry, Slough Lane, Ardleigh, Essex CO7 7RU	Approved	Information unavailable.	3	N/A	No	
Land At Martells Quarry, Slough Lane, Ardleigh, Essex CO7 7RU	Approved	Information unavailable.	3	N/A	No	
Crown Quarry (Ardleigh Reservoir Extension), Wick Farm, Old Ipswich	Approved	Information unavailable.	3	N/A	No	

Project	Status	Construction period	Closest distance from the onshore project area (km)	Confidence in data	Included in the CEA (Y/N)	Rationale
Road, Tendring, Colchester, CO7 7QR						
Ardleigh Waste Transfer Station, A120, Ardleigh, Colchester, CO7 7SL	Approved	Information unavailable.	5	N/A	No	
35 Roach Vale, Colchester, CO4 3YN	Approved	Information unavailable.	4	N/A	No	
Elmstead Hall, Elmstead, Colchester	Approved	Information unavailable.	5	N/A	No	
Elmstead Hall, Elmstead, Colchester, CO7 7EX	Approved	Information unavailable.	5	N/A	No	
Tendring District Council						
Land Between the A120 and A133, To The East of Colchester and of Elmstead Market	Awaiting decision	Information unavailable.	3	N/A	No	In consideration of the type of development proposed and the distance from North Falls, there would be no potential for direct or indirect physical cumulative effects or potential for cumulative effects on heritage setting.
Hamilton Lodge Parsons Hill Great Bromley Colchester Essex CO7 7JB	Approval - Outline	Information unavailable.	2	N/A	No	
Land adjacent to Lawford Grid Substation Ardleigh Road Little Bromley Essex CO11 2QB	Approved	Information unavailable.	0.3	Low	Yes	The proposed battery energy storage scheme is located in close proximity to the onshore substation zone for North Falls. If the Project construction overlaps with the construction of the North Falls substation, cumulative effects on heritage setting could occur, depending on the eventual North Falls onshore substation

Project	Status	Construction period	Closest distance from the onshore project area (km)	Confidence in data	Included in the CEA (Y/N)	Rationale
						location. The potential for direct and indirect physical cumulative effects on heritage assets is unlikely. Depending on the eventual North Falls onshore substation location, cumulative effects on heritage setting could also occur.

25.9.3 Assessment of cumulative effects

354. Following a review of projects (presented in Table 25.14) which have the potential to overlap temporally or spatially with North Falls, three developments have been scoped into the CEA for this chapter, these are:
- Five Estuaries Offshore Wind Farm ('Five Estuaries');
 - East Anglia GREEN; and
 - Land adjacent to Lawford Grid Substation Ardleigh Road Little Bromley Essex CO11 2QB (for construction and operation of a 50MW Battery Energy Storage System ('Little Bromley BESS')).
355. These three projects are considered further in Table 25.15 and Table 25.16 during construction and operation respectively. The assessments will be undertaken again for the ES, based on the level of information regarding these other projects that is available at that time.
356. The review of projects for the CEA has identified no potential cumulative effects in relation to Impact 1: Direct physical impact on (permanent change to) designated heritage assets as a result of construction works as these will be avoided.

Table 25.15 Cumulative effects from other projects on onshore archaeology and cultural heritage during construction

Project	Construction Impacts 2 and 4: Direct and indirect physical impact on (permanent change to) non-designated heritage assets arising as a result of the construction phase	Construction Impact 5 and 6: Temporary change to the setting of designated and non-designated heritage assets arising as a result of the construction phase
Five Estuaries Offshore Wind Farm	<p>The Five Estuaries onshore search area overlaps a very similar geographical area to the North Falls onshore project area. The Five Estuaries onshore search area will include a landfall, onshore cable corridor(s) and onshore substation, and nearshore works will also be required.</p> <p>The overlapping nature of both project areas means that there is the potential for direct and indirect physical cumulative effects on buried archaeology, geoarchaeological / palaeoenvironmental deposits and above ground heritage assets associated with Five Estuaries construction activities, as they intersect the onshore project area.</p> <p>It is anticipated that a mitigation strategy which will seek to avoid, reduce or offset the effects of direct and indirect physical impacts will be adopted by Five Estuaries.</p> <p>As both projects will adopt a mitigation strategy, no likely significant direct or indirect physical cumulative effects during construction are predicted over and above the effects of North Falls.</p> <p>With these measures in place, direct and indirect physical cumulative effects during construction are anticipated to be non-significant in EIA terms.</p> <p>The Applicant will incorporate relevant new information presented by Five Estuaries within the CEA in the ES.</p>	<p>The Five Estuaries onshore search area overlaps a very similar geographical area to the North Falls onshore project area. The Five Estuaries onshore search area will include a landfall, onshore cable corridor(s) and onshore substation, and nearshore works will also be required.</p> <p>If there is a temporal overlap in construction period for both projects there is the potential for temporary change to the setting of designated and non-designated heritage assets associated with Five Estuaries construction activities, as they will share intervisibility with the same heritage assets as the onshore project area.</p> <p>Any cumulative change to heritage setting will be temporary and reversible.</p> <p>No likely significant cumulative effects on heritage setting during construction are predicted over and above the effects of North Falls.</p> <p>In consideration of the temporary nature of the construction period, cumulative effects on heritage setting are anticipated to be non-significant in EIA terms.</p> <p>The Applicant will incorporate relevant new information presented by Five Estuaries within the CEA in the ES.</p>
East Anglia GREEN	<p>A new onshore substation is proposed to be built as part of the East Anglia GREEN proposals by National Grid, close to the North Falls onshore substation zone.</p> <p>The close proximity of both project areas means that there is the potential for direct and indirect physical cumulative effects on buried archaeology, geoarchaeological / palaeoenvironmental deposits and above ground heritage assets associated with East Anglia GREEN construction activities, as they may potentially intersect the same known and unknown heritage assets.</p> <p>It is anticipated that a mitigation strategy which will seek to avoid, reduce or offset the effects of direct and indirect physical impacts will be adopted by East Anglia GREEN.</p>	<p>If the construction schedules for North Falls and East Anglia GREEN overlap temporally, there is the potential for temporary cumulative effects on heritage setting to occur.</p> <p>Any cumulative change to heritage setting will be temporary and reversible, therefore no likely significant cumulative effects on heritage setting during construction are predicted over and above the effects of North Falls.</p> <p>In consideration of the temporary nature of the construction period, cumulative effects on heritage setting are anticipated to be non-significant in EIA terms.</p> <p>The Applicant will incorporate relevant new information presented by East Anglia Green within the CEA in the ES.</p>

Project	Construction Impacts 2 and 4: Direct and indirect physical impact on (permanent change to) non-designated heritage assets arising as a result of the construction phase	Construction Impact 5 and 6: Temporary change to the setting of designated and non-designated heritage assets arising as a result of the construction phase
	<p>As both projects will adopt a mitigation strategy, no likely significant direct or indirect physical cumulative effects during construction are predicted over and above the effects of North Falls.</p> <p>With these measures in place, direct and indirect physical cumulative effects during construction are anticipated to be non-significant in EIA terms.</p> <p>The Applicant will incorporate relevant new information presented by East Anglia GREEN within the CEA in the ES.</p>	
Little Bromley BESS	<p>An archaeological desk-based assessment was not submitted with the planning application for Little Bromley BESS. However, the recommended condition for archaeological evaluation and investigation from Essex County Council HES implies that the project is likely to have a direct physical impact on known and potential buried archaeological remains. In consideration of the proximity of this project to the North Falls onshore substation, there is potential for direct physical cumulative effects on buried archaeological remains.</p> <p>As both projects will adopt a mitigation strategy, no likely significant direct physical cumulative effects during construction are predicted over and above the effects of North Falls.</p> <p>With these measures in place, direct physical cumulative effects during construction are anticipated to be non-significant in EIA terms.</p> <p>The Applicant will incorporate relevant new information presented by Little Bromley BESS within the CEA in the ES.</p>	<p>If the construction schedules for North Falls and Little Bromley BESS overlap temporally, there is the potential for temporary cumulative effects on heritage setting to occur.</p> <p>Any cumulative change to heritage setting will be temporary and reversible, therefore no likely significant cumulative effects on heritage setting during construction are predicted over and above the effects of North Falls.</p> <p>In consideration of the temporary nature of the construction period, cumulative effects on heritage setting are anticipated to be non-significant in EIA terms.</p> <p>The Applicant will incorporate relevant new information presented by Little Bromley BESS within the CEA in the ES.</p>

Table 25.16 Cumulative effect from other projects on onshore archaeology and cultural heritage during operation

Project	Operation Impact 7 and 8: Permanent change to the setting of designated and non-designated heritage assets arising as a result of operational works
Five Estuaries Offshore Wind Farm	The level of information available regarding the Five Estuaries project is not sufficient to undertake a full CEA of potential permanent changes to heritage setting. The Applicant is in ongoing dialogue with the developer and a detailed cumulative operational assessment will be undertaken in the CEA in the ES, depending on the information available at the time.

Project	Operation Impact 7 and 8: Permanent change to the setting of designated and non-designated heritage assets arising as a result of operational works
	<p>At this stage, the primary cumulative effect considerations with respect to the setting of heritage assets is expected to be limited to the potential intervisibility of the Project's onshore substation with the Five Estuaries onshore substation, and any potential to cumulatively effect the setting of (the same) heritage assets in proximity to these.</p> <p>A full setting assessment will be carried out and presented in the ES as the design of both projects is progressed and finalised. At present, there is anticipated to be a level of change to the setting of heritage assets, however this is not expected to impact their heritage significance to levels considered significant in EIA terms.</p>
East Anglia GREEN	<p>The level of information available regarding the East Anglia GREEN project is not sufficient to undertake a full CEA of potential permanent changes to heritage setting. The Applicant is in ongoing dialogue with the developer and a detailed cumulative operational assessment will be undertaken in the CEA in the ES, depending on the information available at the time.</p> <p>At this stage, the primary cumulative effect considerations with respect to the setting of heritage assets is expected to be limited to the potential intervisibility of the Project's onshore substation with the East Anglia GREEN onshore substation, and any potential to cumulatively effect the setting of (the same) heritage assets in proximity to these.</p> <p>A full setting assessment will be carried out and presented in the ES as the design of both projects is progressed and finalised. At present, there is anticipated to be a level of change to the setting of heritage assets, however this is not expected to impact their heritage significance to levels considered significant in EIA terms.</p>
Little Bromley BESS	<p>At this stage in the North Falls design, prior to selection of a final onshore substation location within the onshore substation zone, it has not been possible to undertake a detailed assessment of permanent cumulative effects on heritage setting with the proposed Little Bromley BESS. Assessment of the permanent cumulative effects on heritage setting will be considered in detail within the CEA in the ES when sufficient information is available.</p> <p>The primary cumulative effect considerations with respect to the setting of heritage assets is expected to be limited to the potential intervisibility of the Project's onshore substation with Little Bromley BESS, and any potential to cumulatively effect the setting of (the same) heritage assets in proximity to these.</p> <p>A full setting assessment will be carried out and presented in the ES as the design of both projects is progressed and finalised. At present, there is anticipated to be a limited level of change to the setting of heritage assets, however this is not expected to impact their heritage significance to levels considered significant in EIA terms.</p>

25.10 Transboundary effects

357. There are no transboundary impacts with regard to onshore archaeology and cultural heritage as the onshore project area would not be sited in proximity to any international boundaries. Transboundary impacts are therefore scoped out of this assessment and are not considered further.

25.11 Interactions

358. There are potential interactions between the onshore archaeology and cultural heritage topic and other topics that have been considered within this PEIR. Table 25.17 provides a summary of the principal interactions and signposts to where those issues have been addressed.

Table 25.17 Onshore archaeology and cultural heritage interactions

Impact / receptor	Related Chapter (Volume I)	Where Addressed in this Chapter	Rationale
Construction			
Impacts 1 and 2:	No interactions identified.		
Impacts 3 and 4: Indirect (physical) impacts on designated and non-designated heritage assets.	Chapter 21 Water Resources and Flood Risk	Section 25.7.1.3	Potential impacts as a result of changes to ground conditions affecting buried archaeological deposits.
	Chapter 26 Noise and Vibration	Section 25.7.1.3	Potential for vibration from groundworks affecting the fabric of a heritage asset.
Impacts 5 and 6: Temporary change to the setting of heritage assets.	Chapter 16 Offshore Archaeology and Cultural Heritage	Section 25.7.1.4	Impacts to the setting of coastal heritage assets may occur associated with activities associated with the installation of offshore infrastructure.
	Chapter 20 Onshore Air Quality	Section 25.7.1.4	Potential impacts from dust could change the setting of heritage assets.
	Chapter 26 Noise and Vibration	Section 25.7.1.4	Potential impacts related to noise and vibration could change the setting of heritage assets.
	Chapter 29 Seascape, Landscape and Visual Impact Assessment	Section 25.7.1.4	There could be potential impacts with respect to visual receptors along the coast which could also represent potential changes to the setting of heritage assets.
	Chapter 30 Landscape and Visual Impact Assessment	Section 25.7.1.4	There could be potential impacts with respect to landscape and visual receptors which could also represent potential changes to the setting of heritage assets.
Operation			
Impacts 7 and 8:	Chapter 16 Offshore Archaeology and Cultural Heritage	Section 25.7.2.1	Impacts to the setting of coastal heritage assets may occur associated with the presence of offshore infrastructure.

Impact / receptor	Related Chapter (Volume I)	Where Addressed in this Chapter	Rationale
Permanent change to the setting of heritage assets.	Chapter 26 Noise and Vibration	Section 25.7.2.1	Potential impacts related to noise and vibration could change the setting of heritage assets.
	Chapter 29 Seascape, Landscape and Visual Impact Assessment	Section 25.7.2.1	There could be potential impacts with respect to visual receptors along the coast which could also represent potential changes to the setting of heritage assets.
	Chapter 30 Landscape and Visual Impact Assessment	Section 25.7.2.1	There could be potential impacts with respect to landscape and visual receptors which could also represent potential changes to the setting of heritage assets.
Decommissioning			
Interactions and the identified impacts associated with the decommissioning phase would be no greater than those identified for the construction phase.			

25.12 Inter-relationships

359. The impacts identified and assessed in this chapter have the potential to interrelate with each other. The areas of potential inter-relationships between impacts are presented in Table 25.18. This provides a screening tool for which impacts have the potential to interrelate. Table 25.19 provides an assessment for each receptor (or receptor group) as related to these impacts.
360. Within Table 25.19 the impacts are assessed relative to each development phase (i.e., construction, operation or decommissioning) to see if (for example) multiple construction impacts affecting the same receptor could increase the significance of effect upon that receptor. Following this, a lifetime assessment is undertaken which considers the potential for impacts to affect receptors across all development phases.

Table 25.18 Inter-relationships between impacts - screening

Potential Interaction between Impacts						
Construction						
	Impact 1: Direct Physical Impact on Designated Heritage Assets	Impact 2: Direct Impact on Non-designated Heritage Assets	Impact 3: Indirect Physical Impact on Designated Heritage Assets	Impact 4: Indirect Physical Impact on Non-designated Heritage Assets	Impact 5: Temporary Change to the Setting of Designated Heritage Assets	Impact 6: Temporary Change to the Setting of Non-designated Heritage Assets
Impact 1: Direct Physical Impact on Designated Heritage Assets		No	Yes	No	Yes	No
Impact 2: Direct Impact on Non-designated Heritage Assets	No		No	Yes	No	Yes
Impact 3: Indirect Physical Impact on Designated Heritage Assets	Yes	No		No	Yes	No
Impact 4: Indirect Physical Impact on Non-designated Heritage Assets	No	Yes	No		No	Yes
Impact 5: Temporary Change to the Setting of Designated Heritage Assets	Yes	No	Yes	No		No
Impact 6: Temporary Change to the Setting of Non-designated Heritage Assets	No	Yes	No	Yes	No	
Operation						
	Impact 1: Permanent Change to the Setting of Designated Heritage Assets	Impact 2: Permanent Change to the Setting of Non-designated Heritage Assets		Impact 3: Indirect Physical Impact on Designated Heritage Assets	Impact 4: Indirect Physical Impact on Non-designated Heritage Assets	

Potential Interaction between Impacts				
Impact 1: Permanent Change to the Setting of Designated Heritage Assets		No	Yes	No
Impact 2: Permanent Change to the Setting of Non-designated Heritage Assets	No		No	Yes
Impact 3: Indirect Physical Impact on Designated Heritage Assets	Yes	No		No
Impact 4: Indirect Physical Impact on Non-designated Heritage Assets	No	Yes	No	
Decommissioning				
It is anticipated that the decommissioning impacts would be similar in nature to those of construction.				

Table 25.19 Inter-relationship between impacts – phase and lifetime assessment

Receptor	Highest significance level			Phase assessment	Lifetime assessment
	Construction	Operation	Decommissioning		
Designated Heritage Assets	No impact	Minor adverse	No impact	<p>No greater than individually assessed impact.</p> <p>Mitigation (avoidance, micro-siting and route refinement) will minimise or remove the potential for indirect physical impacts on designated heritage assets during construction. There would be no direct or indirect physical disturbance during operation.</p> <p>Setting is not relevant to the construction and decommissioning phases as any change will be temporary.</p> <p>It is therefore considered that there will be no pathway for interaction to exacerbate the potential impacts associated with these activities during or between any of the Project phases.</p>	<p>No greater than individually assessed impact.</p> <p>Infrastructure is only installed during construction, therefore there is no greater footprint taken as part of the operational or decommissioning phases.</p> <p>Setting is not relevant to the construction and decommissioning phases as any change will be temporary.</p> <p>It is therefore considered that over the Project lifetime these impacts would not combine to increase the significance level of any impacts identified in this assessment.</p>
Non-designated Heritage Assets	Minor adverse	Minor adverse	Minor adverse	<p>No greater than individually assessed impact.</p> <p>Mitigation will minimise or offset the potential for direct physical and indirect physical impacts on non-designated heritage assets during construction. There would be no direct or indirect physical disturbance during operation.</p> <p>Setting is not relevant to the construction and decommissioning phases as any change will be temporary.</p> <p>It is therefore considered that there will be no pathway for interaction to exacerbate the potential impacts associated with these activities during or between any of the Project phases.</p>	<p>No greater than individually assessed impact.</p> <p>Infrastructure is only installed during construction, therefore there is no greater footprint taken as part of the operational or decommissioning phases.</p> <p>Setting is not relevant to the construction and decommissioning phases as any change will be temporary.</p> <p>It is therefore considered that over the Project lifetime these impacts would not combine to increase the significance level of any impacts identified in this assessment.</p>

25.13 Summary

- 361. This chapter provides a characterisation of the existing environment for onshore archaeology and cultural heritage based on both existing and site-specific survey data, which has established that there would be some minor adverse residual effects on heritage assets during construction, operation and decommissioning phases of North Falls.
- 362. A summary of the findings of this chapter for onshore archaeology and cultural heritage is presented in Table 25.20.
- 363. In accordance with the assessment methodology presented in Section 25.4, this table should also be used in conjunction with the additional narrative explanations provided in Section 25.7.
- 364. The impact assessment as presented in this chapter assumes that activities associated with construction may theoretically occur anywhere within the onshore project area.
- 365. With respect to direct physical effects (i.e., buried and above ground archaeological remains) further refinement of the onshore project area down to the DCO application boundary (typically 60m wide onshore cable route) will seek to further avoid known heritage assets, where possible within the confines of other environmental and engineering constraints. In addition, with the implementation and completion of post-consent mitigation, it is not anticipated that there will be residual impacts on the heritage significance of heritage assets with archaeological interest greater than minor adverse.
- 366. Heritage setting assessment work is ongoing, and final impact assessment and summaries / conclusions have not yet been conducted or drawn for individual heritage assets that are currently under consideration in this PEIR. The settings assessment will be progressed and reported on in full in the final DCO application.
- 367. Likewise, the potential for cumulative impacts to occur to potential onshore archaeological and cultural heritage assets will be assessed following refinement of the onshore project area and reported on in full in the final DCO application.
- 368. A summary of the assessment is presented in Table 25.20. The significance of effect represents a preliminary worst case scenario.

Table 25.20 Summary of potential likely significant effects on onshore archaeology and cultural heritage topic

Potential impact	Receptor	Sensitivity	Magnitude of impact	Pre-mitigation effect	Mitigation measures proposed	Residual effect
Construction						
Impact 1: Direct physical impact on designated heritage assets	Known designated heritage assets	Medium - High	No impact	N/A	N/A	N/A
Impact 2: Direct physical impact on non-designated heritage assets	Known and potential buried archaeological and geoarchaeological / palaeoenvironmental remains and above ground heritage assets	Low - High	High adverse	Moderate - major adverse	Further programmes of survey and evaluation to inform a mitigation strategy for either preservation in situ or preservation by record i.e. archaeological excavation, geoarchaeological / palaeoenvironmental assessment or watching brief.	Following the application of appropriate and proportionate evaluation and mitigation approaches, to be agreed in consultation with the ETG, the residual impact is anticipated to be reduced (or offset) to an impact significance level of minor adverse, as a worst case scenario.
Impact 3: Indirect physical impact on designated heritage assets	Deposits associated with designated heritage assets Vibration affecting designated heritage assets	Medium - High	No impact	N/A	N/A	N/A
Impact 4: Indirect physical impact on non-designated heritage assets	Known palaeoenvironmental and geoarchaeological deposits	Low - Medium	Anticipated to be medium adverse as a worst case scenario	Moderate Adverse as a worst case scenario	A programme of Geoarchaeological / Palaeoenvironmental survey to inform any mitigation requirements.	Following the application of appropriate and proportionate mitigation

Potential impact	Receptor	Sensitivity	Magnitude of impact	Pre-mitigation effect	Mitigation measures proposed	Residual effect
	Vibration affecting non-designated heritage assets	Low - High	Negligible	Minor Adverse	No further mitigation is proposed with respect to potential vibration from the operation of the HDD.	approaches, to be agreed in consultation with the ETG, the residual impact is anticipated to be reduced (or offset) to an impact significance level of minor adverse as a worst case scenario.
Impact 5: Temporary change to the setting of designated heritage assets	Known designated heritage assets	Medium - High	Anticipated to be negligible to low adverse as a worst case scenario	Minor to moderate adverse as a worst case scenario	Next steps moving from PEIR to final DCO application include further site visits and/or revisits in respect of the proposed DCO boundary and specific associated infrastructure (e.g., onshore substation location). As well as the application of LVIA and SLVIA tools.	The residual impact is anticipated to be lowered in the majority of cases to minor adverse, as a worst case scenario, following the application of appropriate and proportionate mitigation approaches, to be agreed in ongoing consultation with the ETG.
Impact 6: Temporary change to the setting of non-designated heritage assets	Known non-designated above ground heritage assets	Low - High	Anticipated to be negligible to low adverse as a worst case scenario	Negligible to moderate adverse as a worst case scenario	Next steps moving from PEIR to final DCO application include further site visits and/or revisits in respect of the proposed DCO boundary and specific associated infrastructure (e.g., onshore substation location). As well as the application of LVIA and SLVIA tools.	The residual impact is anticipated to be lowered in the majority of cases to minor adverse, as a worst case scenario, following the application of appropriate and proportionate mitigation approaches, to be

Potential impact	Receptor	Sensitivity	Magnitude of impact	Pre-mitigation effect	Mitigation measures proposed	Residual effect
						agreed in ongoing consultation with the ETG.
Operation						
Impact 7: Permanent change to the setting of designated heritage assets	Known designated heritage assets	Medium - High	Anticipated to be medium adverse as a worst case scenario	Moderate to major adverse as a worst case scenario	Next steps moving from PEIR to final DCO application include further site visits and/or revisits in respect of the proposed DCO boundary and specific associated infrastructure (e.g., onshore substation location). As well as the application of LVIA and SLVIA tools.	The residual impact is anticipated to be lowered in the majority of cases to minor adverse, as a worst case scenario, following the application of appropriate and proportionate mitigation approaches, to be agreed in ongoing consultation with the ETG.
Impact 8: Permanent change to the setting of non-designated heritage assets	Known non-designated above ground heritage assets	Low - High	Anticipated to be medium adverse as a worst case scenario	Minor to major adverse as a worst case scenario	Next steps moving from PEIR to final DCO application include further site visits and/or revisits in respect of the proposed DCO boundary and specific associated infrastructure (e.g., onshore substation location). As well as the application of LVIA and SLVIA tools.	The residual impact is anticipated to be lowered in the majority of cases to minor adverse, as a worst case scenario, following the application of appropriate and proportionate mitigation approaches, to be agreed in ongoing consultation with the ETG.
Decommissioning						
No decision has been made regarding the final decommissioning policy, as it is recognised that industry best practice, rules and legislation change over time. The decommissioning methodology would need to be finalised nearer to the end of the lifetime of the Project so as to be in line with latest and current guidance, policy and legislation at that point. Any						

Potential impact	Receptor	Sensitivity	Magnitude of impact	Pre-mitigation effect	Mitigation measures proposed	Residual effect
such methodology would be agreed with the relevant authorities and statutory consultees. It is anticipated that the decommissioning impacts could be similar in nature to those of construction, depending on the extent and depths to which any further intrusive sub-surface decommissioning groundworks may occur.						

25.14 References

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