



**SCOTTISHPOWER
RENEWABLES**

East Anglia ONE North Offshore Windfarm

Chapter 24 Archaeology and Cultural Heritage

Environmental Statement Volume 1

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Glossary of Acronyms

AAA	Areas of Archaeological Activity
ADS	Archaeology Data Service
ADBA	Archaeology and Cultural Heritage Desk Based Assessment
BGS	British Geological Survey
CCS	Construction Consolidation Sites
CoCP	Code of Construction Practice
CIA	Cumulative Impact Assessment
CIfA	Chartered Institute for Archaeologists
DBA	Desk Based Assessment
DCO	Development Consent Order
DECC	Department of Energy and Climate Change
EIA	Environmental Impact Assessment
EMP	Ecological Management Plan
ES	Environmental Statement
ETG	Expert Topic Group
GI	Ground Investigation
GIS	Gas Insulated Switchgear
GPA	Good Practice Advice
HDD	Horizontal Directional Drilling
HER	Historic Environment Record
HLC	Historic Landscape Characterisation
HSG	Heritage Steering Group
IPC	Infrastructure Planning Commission
ISA	Inner Study Area
LIDAR	Light Detection and Ranging
LMP	Landscape Management Plan
MHCLG	Ministry of Housing, Communities and Local Government
MHWS	Mean High Water Springs
NMP	National Mapping Programme
NPPF	National Planning Policy Framework
NPS	National Policy Statement(s)
NRHE	National Record for the Historic Environment
NSIP	Nationally Significant Infrastructure Project
OLEMS	Outline Landscape and Ecological Mitigation Strategy
ORPAD	Offshore Renewables Protocol for Archaeological Discoveries
OS	Ordnance Survey
OSA	Outer Study Area
OWSI	Outline Written Scheme of Investigation
PAD	Protocol for Archaeological Discoveries
PAS	Portable Antiquities Scheme
PEIR	Preliminary Environmental Information Report
PID	Public Information Day
PLBCAA	Planning Listed Buildings and Conservation Areas Act
PPG	Planning Practice Guidance
SCC	Suffolk County Council

SCCAS	Suffolk County Council Archaeological Service
SCDC	Suffolk Coastal District Council
SMR	Strip, Map and Record (excavation)
SMS	Strip, Map and Sample (excavation)
SoS	Secretary of State
SPR	ScottishPower Renewables
SPS	Suffolk Preservation Society
WCS	Worst Case Scenario
WDC	Waveney District Council
WSI	Written Scheme of Investigation
WWII	Second World War
ZTV	Zones of Theoretical Visibility

Glossary of Terminology

Applicant	East Anglia ONE North Limited.
Cable sealing end compound	A compound which allows the safe transition of cables between the overhead lines and underground cables which connect to the National Grid substation.
Cable sealing end (with circuit breaker) compound	A compound (which includes a circuit breaker) which allows the safe transition of cables between the overhead lines and underground cables which connect to the National Grid substation.
Construction consolidation sites	Compounds associated with the onshore works which may include elements such as hard standings, lay down and storage areas for construction materials and equipment, areas for vehicular parking, welfare facilities, wheel washing facilities, workshop facilities and temporary fencing or other means of enclosure.
Development area	The area comprising the onshore development area and the offshore development area (described as the 'order limits' within the Development Consent Order).
East Anglia ONE North project	The proposed project consisting of up to 67 wind turbines, up to four offshore electrical platforms, up to one construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
East Anglia ONE North windfarm site	The offshore area within which wind turbines and offshore platforms will be located.
Horizontal directional drilling (HDD)	A method of cable installation where the cable is drilled beneath a feature without the need for trenching.
HDD temporary working area	Temporary compounds which will contain laydown, storage and work areas for HDD drilling works.
Jointing bay	Underground structures constructed at intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Landfall	The area (from Mean Low Water Springs) where the offshore export cables would make contact with land, and connect to the onshore cables.
Link boxes	Underground chambers within the onshore cable route housing electrical earthing links.
National electricity grid	The high voltage electricity transmission network in England and Wales owned and maintained by National Grid Electricity Transmission
National Grid infrastructure	A National Grid substation, cable sealing end compounds, cable sealing end (with circuit breaker) compound, underground cabling and National Grid overhead line realignment works to facilitate connection to the national electricity grid, all of which will be consented as part of the proposed East Anglia ONE North project Development Consent Order but will be National Grid owned assets.

National Grid overhead line realignment works	Works required to upgrade the existing electricity pylons and overhead lines (including cable sealing end compounds and cable sealing end (with circuit breaker) compound) to transport electricity from the National Grid substation to the national electricity grid.
National Grid overhead line realignment works area	The proposed area for National Grid overhead line realignment works.
National Grid substation	The substation (including all of the electrical equipment within it) necessary to connect the electricity generated by the proposed East Anglia ONE North project to the national electricity grid which will be owned by National Grid but is being consented as part of the proposed East Anglia ONE North project Development Consent Order.
National Grid substation location	The proposed location of the National Grid substation.
Onshore cable corridor	The corridor within which the onshore cable route will be located.
Onshore cable route	This is the construction swathe within the onshore cable corridor which would contain onshore cables as well as temporary ground required for construction which includes cable trenches, haul road and spoil storage areas.
Onshore cables	The cables which would bring electricity from landfall to the onshore substation. The onshore cable is comprised of up to six power cables (which may be laid directly within a trench, or laid in cable ducts or protective covers), up to two fibre optic cables and up to two distributed temperature sensing cables.
Onshore development area	The area in which the landfall, onshore cable corridor, onshore substation, landscaping and ecological mitigation areas, temporary construction facilities (such as access roads and construction consolidation sites), and the National Grid Infrastructure will be located.
Onshore infrastructure	The combined name for all of the onshore infrastructure associated with the proposed East Anglia ONE North project from landfall to the connection to the national electricity grid.
Onshore preparation works	Activities to be undertaken prior to formal commencement of onshore construction such as pre-planting of landscaping works, archaeological investigations, environmental and engineering surveys, diversion and laying of services, and highway alterations.
Onshore substation	The East Anglia ONE North substation and all of the electrical equipment within the onshore substation and connecting to the National Grid infrastructure.
Onshore substation location	The proposed location of the onshore substation for the proposed East Anglia ONE North project.
Transition bay	Underground structures at the landfall that house the joints between the offshore export cables and the onshore cables.

24 Archaeology and Cultural Heritage

24.1 Introduction

1. This chapter of the Environmental Statement (ES) summarises the existing baseline conditions for the archaeological and cultural heritage environment (the historic environment) within the onshore development area of the proposed East Anglia ONE North project. It also assesses the potential impacts upon the onshore historic environment (and associated heritage assets), which may arise as a result of the proposed East Anglia ONE North project, and describes the embedded and potential additional mitigation measures that have already been or will be applied as the proposed East Anglia ONE North project progresses.
2. This chapter has been prepared in line with the Method Statement previously produced for archaeology and cultural heritage (Royal HaskoningDHV 2018a) and consulted on with the Heritage Steering Group (HSG), comprising Historic England, Suffolk County Council (SCC), Suffolk County Council Archaeology Service (SCCAS), Suffolk Coastal District Council (SCDC) and Suffolk Preservation Society (SPS), as part of the first Expert Topic Group (ETG) meeting held 26th April 2018 (see **section 24.2** and **Appendix 24.1**). The Method Statement was produced for discussion and agreement within the ETG process and is superseded by the methodology presented in this chapter following consultation, progression of assessment and comments received (see **Appendix 24.1**). In terms of the impact assessment methodology, although the matrix-based approach has been maintained and utilised as part of a broadly standardised approach to the wider Environmental Impact Assessment (EIA), the conclusions reached within this chapter are qualified through a robust, reasoned and descriptive analysis (e.g. a narrative) and are underpinned by professional judgement as part of a more qualitative approach, wherever possible. This is detailed further within **section 24.4**.
3. This chapter draws upon the accompanying supporting technical reports and has been streamlined as far as possible (primarily to aid its readability), with more detailed technical information available within related appendices (**Appendices 24.3 to 24.8**).
4. The baseline conditions set out in **section 24.5** provide an account of the known archaeological and cultural heritage resource (including designated and non-designated heritage assets) and a summary of the potential for currently unrecorded sites (assets) and finds to exist within and surrounding the onshore development area, as well as a review of the historic landscape. These baseline conditions have been established within defined study areas based on the onshore development area (**Figure 24.1**).

5. Baseline conditions are based on the results of a full and comprehensive Archaeological and Cultural Heritage Desk Based Assessment (ADBA) produced by Headland Archaeology (**Appendix 24.3**) in line with a Written Scheme of Investigation (WSI) (Royal HaskoningDHV 2018b), which established the required scope prior to the commencement of the ADBA work. The WSI for Desk Based Assessment (DBA) was also consulted on with the HSG (see **section 24.2** and **Appendix 24.1**).
6. Baseline conditions are also informed by the archaeological assessment of geophysical survey data acquired within the onshore development area (**Appendix 24.4**). The programme of archaeological geophysical survey (detailed magnetometry), undertaken in compliance with the Method Statement for Onshore Geophysical Survey (Headland Archaeology 2018) (as agreed in advance with SCCAS) was conducted across 64% of the onshore development area (this relates to approximately 61% of the landfall location, 88% of the onshore cable corridor, 90% of the onshore substation and National Grid substation location (with the remaining areas not surveyed to date predominantly comprising those areas of land that are either not accessible and/or conducive for survey such as areas of woodland and areas beneath the overhead line realignment area)) (**Figure 24.4**). Results have also informed discussions regarding the proposed East Anglia ONE North project design, particularly in regard to siting of the onshore infrastructure and onshore development area refinement. For further details please refer to **Chapter 4 Site Selection and Assessment of Alternatives**.
7. The baseline conditions which are set out in **Appendices 24.3** and **24.4** form the primary information sources for potential below ground remains for this chapter. The proposed East Anglia ONE North project has also set forth a strategy to undertake an initial programme of targeted trial trenching, archaeological earthwork identification and metal detecting (the latter at a single high potential location) to inform the post consent mitigation strategy, in relation to the archaeological and cultural heritage resource, secured through the requirement of the draft Development Consent Order (DCO). The scope and approaches to these works are outlined in three survey-specific WSIs appended to the Outline Written Scheme of Investigation (OWSI) submitted with this DCO application, as consulted on with SCCAS.
8. Above ground heritage assets (designated and non-designated) have also been subject to consideration through the ADBA approaches, walkovers and site visits undertaken. This has included assessment from a direct (physical) and indirect (non-physical), associated with changes in setting and related heritage significance, impacts perspective (see **sections 24.5** and **24.6** and **Appendices 24.3** and **24.7** for further detail). The preliminary settings assessment work is

included within **Appendix 24.3**. The settings assessment was then progressed to full assessment and is detailed within two separate documents (**Appendix 24.7** which addresses the impact of onshore infrastructure in the setting of heritage assets – the findings and conclusions of which inform this chapter - and **Appendix 24.8** which is a screening exercise addressing the impact of offshore infrastructure on the significance of coastal heritage assets).

9. Offshore and intertidal archaeology and cultural heritage within the East Anglia ONE North offshore development area (including the landfall below Mean High Water Springs (MHWS)) are assessed in **Chapter 16 Marine Archaeology and Cultural Heritage**. Although reported on separately, correlation between the general assessment methodologies utilised in the onshore and offshore and intertidal archaeological and cultural heritage chapters has been sought, where relevant, in order to produce an integrated and coherent account of the historic environment and the degree to which the proposed East Anglia ONE North project may interact with the archaeological and cultural heritage resource as a whole.
10. Inter-relationships have been identified between the following assessment topics. This chapter provides cross references where relevant and should therefore be read in conjunction with these (**section 24.8**). The relevant chapters are:
 - **Chapter 16 Marine Archaeology and Cultural Heritage;**
 - **Chapter 25 Noise and Vibration;**
 - **Chapter 28 Seascape, Landscape and Visual Amenity;** and
 - **Chapter 29 Landscape and Visual Impact Assessment.**
11. This chapter has been prepared by Royal HaskoningDHV in consultation with the HSG (**section 24.2** and **Appendix 24.1**), with supporting technical assessment and reporting provided by Headland Archaeology, and in accordance with legislation, policy and industry standards and guidance documents relevant to the archaeological and cultural heritage (historic) environment (**section 24.4.1**). Specific reference has been made to the relevant National Policy Statements (NPSs), the National Planning Policy Framework (NPPF) and associated Planning Practice Guidance (PPG).
12. It should be noted that the East Anglia TWO offshore windfarm project (the proposed East Anglia TWO project) is also in the application stage. The proposed East Anglia TWO project has a separate DCO application which has been submitted at the same time as the proposed East Anglia ONE North project. This assessment considers the cumulative impact of the proposed East Anglia ONE

North project with the proposed East Anglia TWO project (**Appendix 24.2**) and subsequently with other proposed developments (**section 24.7**).

24.2 Consultation

13. Consultation is a key feature of the EIA process, and continues throughout the lifecycle of a project, from its initial stages through to consent and post-consent.
14. To date, consultation with regards to archaeology and cultural heritage has been undertaken via ETG, also referred to for archaeology and cultural heritage as the HSG, described within **Chapter 5 EIA Methodology**, with meetings held in April 2018, January 2019 and April 2019 and through the East Anglia ONE North Scoping Report (ScottishPower Renewables (SPR) 2017) and the Preliminary Environmental Information Report (PEIR) (SPR 2019). Feedback received through this process has been considered in preparing the ES where appropriate and this chapter has been updated for the final assessment submitted with the DCO application.
15. The responses received from stakeholders with regards to the Scoping Report, PEIR, as well as feedback to date from the archaeology and cultural heritage HSG, are summarised in **Appendix 24.1**, including details of how these have been taken account of within this chapter.
16. Ongoing public consultation has been conducted through a series of Public Information Days (PIDs) and Public Meetings. PIDs have been held throughout Suffolk in November 2017, March 2018, June / July 2018 and February / March 2019. A series of stakeholder engagement events were also undertaken in October 2018 as part of phase 3.5 consultation. Details of the consultation phases are discussed further in **Chapter 5 EIA Methodology**.
17. **Table 24.1** shows public consultation feedback relating to archaeology and cultural heritage.
18. Full details of the proposed East Anglia ONE North project consultation process are presented in the Consultation Report (document reference 5.1), which is provided as part of the DCO application.

Table 24.1 Public Consultation Responses Relevant to Archaeology and Cultural Heritage

Topic	Response / where addressed in the ES
Phase 1	
<ul style="list-style-type: none"> None. 	-
Phase 2	
<ul style="list-style-type: none"> Substation and onshore cable route location to consider archaeology and heritage. Concern about the preferred crossing of the B1122 (Aldeburgh Road), and the potential impact upon the setting of the Grade II listed Aldringham Court from changes to its setting (e.g. by removal of woodland to south). Suggest trenchless techniques. Impact of western sites and scale of infrastructure (landscape setting of assets in Knodishall and Friston, and a number of isolated grade II listed buildings at W1, 2 and 3) (Figure 24.2). Impact of sites 5 and 6 on Knodishall Church and sites of secondary Roman settlements. View of wind turbines [offshore] from Grade I listed Moot Hill building. 	<p>Embedded mitigation, including project design decisions has considered archaeology and cultural heritage where possible. These are detailed in section 24.3.3.</p> <p>Potential impacts to the setting of listed buildings are provided in section 24.6.1.3, and more specifically Appendices 24.3, 24.7 and 24.8.</p>
Phase 3	
<ul style="list-style-type: none"> Impact on Friston church Grade 2* listed building. Impacts of traffic on B1122 affecting listed buildings. Impact on World War II Ordnance around Aldringham Common and Fens. Impact of road widening on historic built environment. 	<p>Potential impacts to the setting of listed buildings are provided in section 24.6.1.3, and more specifically Appendices 24.3, 24.7 and 24.8.</p>
Phase 3.5	
<ul style="list-style-type: none"> Construction should not damage St. Mary's Church (listed building). Potential impact to Grade 2 listed cottages and houses next to the church in Friston. Potential impact on Friston war memorial. Archaeological impact of cable route. Theberton Grade 1 listed church impacted by traffic. Important mill complex in the village [Friston]. Archaeological heritage asset impact. 	<p>Direct and indirect (associated with change in setting) impacts on designated and non-designated buildings are assessed in section 24.6.1.2 and section 24.6.1.3 respectively, and more specifically Appendices 24.3, 24.7 and 24.8.</p> <p>The potential impact to archaeological remains is assessed in sections 24.6.1.2 and sections 24.6.1.4, supported by Appendices 24.3 and 24.4.</p>

Topic	Response / where addressed in the ES
<ul style="list-style-type: none"> Impact on setting of Grade 2 listed Aldringham Court. 	
Phase 4	
<ul style="list-style-type: none"> Concern regarding the impact on the setting of listed buildings. Potential impact to St. May's Church Grade II listed building. Potential for below ground remains means that a systematic earthwork assessment is necessary. There are 5 Listed Buildings within the study area of the substation site. These are the Parish Church of St Mary (Grade II*), High House Farm, Little Moor Farm, Woodside Farm and Friston House (all Grade II). 	<p>Direct and indirect (associated with change in setting) impacts on designated and non-designated buildings are assessed in section 24.6.1.2 and section 24.6.1.3 respectively, and more specifically Appendices 24.3, 24.7 and 24.8. This includes the assessment of designated buildings surrounding the onshore substation and National Grid infrastructure sites.</p> <p>Direct impacts to buried archaeological remains are detailed in section 24.6.1.1. This includes further detail on proposed earthworks assessments.</p>

24.3 Scope

24.3.1 Study Area

19. The study areas considered as part of this chapter are as per the parameters outlined and agreed in the WSI for DBA (Royal HaskoningDHV 2018b) and as utilised and illustrated within the ADBA itself (**Appendix 24.3**). The study areas have been determined specially in relation to archaeology and cultural heritage concerns.
20. The ADBA (**Appendix 24.3**) was prepared at a time when the onshore development area was not yet fully defined. As such, the ADBA utilises an ADBA Study Area based on project design from July 2018 prior to the refinement of the onshore development area and is therefore considered robust with respect to the final design and layout of the East Anglia ONE North project. The baseline and assessment presented in this chapter has been informed by the outputs of the ADBA, but has been updated appropriate to the onshore development area.
21. Study areas have been defined in relation to the onshore development area (see **Figure 24.1**) which consists of:
 - Landfall;
 - Onshore cable corridor;
 - East Anglia ONE North onshore substation; and
 - National Grid infrastructure.

22. Two study areas have been established for this assessment (see **Figure 24.1**), as follows:
- The Inner Study Area (ISA): a 500m buffer extending from the limits of the onshore development area to gather baseline information on the known designated / non-designated heritage assets that may be affected by temporary changes in their settings (or direct physical change in the case of non-designated assets), as a result of the proposed East Anglia ONE North project. The ISA was also established to inform the assessment of archaeological potential within the onshore development area for currently unrecorded heritage assets; and
 - The Outer Study Area (OSA): a 1km buffer extending from the limits of the East Anglia ONE North onshore substation location and the National Grid infrastructure location to identify designated and non-designated heritage assets that may experience changes to their setting (potentially impacting heritage significance in certain instances), as a result of the proposed East Anglia ONE North project.
23. The OSA encompasses the ISA within the vicinity of the onshore substation and National Grid substation. For clarity, and to avoid duplication, any heritage assets that are recorded or have been identified within both the ISA and OSA are summarised and referred to in relation to the OSA alone. Reference to heritage assets within the ISA within this chapter thereby excludes any assets which fall within the OSA parameters. Where referred to collectively, the term ‘study areas’ is used.
24. The study area parameters have been defined based on an understanding of the topography and nature of the landscape, including consideration of the likely extent of impacts upon heritage significance. They have been further informed by discussions with the landscape and visual impact assessment consultants and the utilisation of associated tool-kits (e.g. Zones of Theoretical Visibility (ZTVs) and photomontages), where relevant. See **Appendix 24.7** for further details.
25. The study area parameters for the consideration of the impact of offshore infrastructure on the significance of coastal heritage assets is detailed and discussed within **Appendix 24.8**.

24.3.1.1 Offsite Highway Works

26. Offsite highway improvements may take place at three locations; the A1094 / B1069 junction, the A12 / A1094 junction and Marlesford Bridge. These works are part of the onshore preparation works which may take place prior to the commencement of main construction. Therefore, detailed assessment of these

works does not form part of the assessment of construction impacts presented in **section 24.6**. These works are to allow larger construction vehicles to access and navigate certain parts of the public road network. Any modifications to roads would be undertaken in consultation with and in accordance with the requirements of the local Highways Authority in accordance with the requirements of the draft DCO. Further details of the works required are presented in **Chapter 6 Project Description**.

27. The offsite highway improvements at the A1094 / B1069 and A12 / A1094 junctions would involve the temporary moving of street furniture and temporary local widening of the highway (or creation of overrun areas). Offsite highway improvements at Marlesford Bridge would additionally require temporary laydown areas for structural works to accommodate abnormal indivisible loads.
28. The offsite highway improvements will not require a large quantity of plant and equipment and the works will have a small footprint, mostly within the existing highway boundary. Given the small footprint and temporary nature of these works, and the limited intrusive elements, along with adherence to best practice detailed in **section 24.3.3**, it is considered that the offsite highway improvements will not give rise to any impacts to buried or above ground archaeology receptors.
29. In addition, prior to undertaking the offsite highway improvements as part of the onshore preparation works, a pre-commencement archaeology execution plan (in accordance with the outline pre-commencement archaeology execution plan submitted with this DCO application) will be submitted to and approved by the Local Planning Authority to discharge a requirement of the draft DCO.

24.3.2 Worst Case Scenarios

30. This section identifies the realistic worst case parameters associated with the proposed East Anglia ONE North project alone. This includes all onshore infrastructure for the proposed East Anglia ONE North project and the National Grid infrastructure that the proposed East Anglia ONE North project will require for ultimate connection to national electricity grid.
31. **Chapter 6 Project Description** details the proposed East Anglia ONE North project parameters using the Rochdale Envelope approach for the ES.
32. **Table 24.2** identifies those realistic worst case parameters of the onshore infrastructure that are relevant to potential impacts on archaeology and cultural heritage during construction, operation and decommissioning phases of the proposed East Anglia ONE North project. Please refer to **Chapter 6 Project Description** for more detail regarding specific activities, and their durations,

which fall within the construction phase. Areas provided for onshore infrastructure are maximum footprints with indicative dimensions provided in brackets.

33. As described in **Chapter 5 EIA Methodology**, there are two co-located onshore substation locations for either the proposed East Anglia ONE North project or the proposed East Anglia TWO project. It should be noted that the draft DCOs for both the proposed East Anglia ONE North and East Anglia TWO projects have the flexibility for either project to use either onshore substation location. The ‘project alone’ assessment in **section 24.6**, and associated chapter figures, have been presented on the intended development strategy of the proposed East Anglia ONE North project using the eastern onshore substation location. There is no difference in potential impacts identified between substation locations, except with respect to the potential indirect (non-physical) impacts resulting from change in the setting of heritage assets. This is covered in **section 24.6.2.1** and **section 24.7.1**, as well as **Appendix 24.7**.

Table 24.2 Realistic Worst Case Scenarios

Impact	Parameter	Notes
Construction		
Impacts related to the landfall	<p>HDD temporary working area: 7,000m² (70m x 100m).</p> <p>Transition bay temporary working area (for 2 transition bays): 1,554m² (37m x 42m).</p> <p>Landfall Construction Consolidation Site (CCS) (x1): 7,040m² (88m x 80m).</p> <p>The effect on the significance of heritage assets, as a result of change in their setting, owing to the establishment and presence of the temporary, surfaced and fenced landfall CCS, HDD temporary works area, associated security and task lighting and the presence of the HDD drilling rig, ducting materials and welfare facilities.</p> <p>See Chapter 25 Noise and Vibration for further details regarding noise and vibration levels during construction.</p>	
Impacts related to the onshore cable route	<p>Onshore cable route: 290,912m² (9,091m x 32m).</p> <p>Jointing bay temporary working area: 570m² (30.6m x 18.6m). Total for 38 jointing bays: 21,660m² (570m² x 38).</p> <p>HDD (retained as an option to cross SPA / SSSI):</p> <p>Entrance pit temporary working area (x1): 6,300m² (90m x 70m).</p>	Refer to section 24.3.3 for instances of onshore cable route adopting a narrower width.

Impact	Parameter	Notes
	<p>Exit pit temporary working area (x1): 2,700m² (90m x 30m).</p> <p>Onshore cable route large CCS (1): 16,500m² (165m x 100m).</p> <p>Onshore cable route medium CCS (2): 14,080m² total (88m x 80m per each medium CCS).</p> <p>Onshore cable route small CCS (2): 6,000m² total (60m x 50m per each small CCS).</p> <p>Total footprint of all onshore cable route CCS: 36,580m².</p> <p>Onshore cable route laydown area: 1,000m².</p> <p>Onshore cable route haul road between landfall and Snape Road (7,331m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 40,435m².</p> <p>Onshore cable route and substation access haul road (1,570m in length x 9m wide): 14,130m².</p> <p>Temporary access roads (957m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 5,231m².</p> <p>The effect on the significance of heritage assets, as a result of change in their setting, owing to the establishment, presence and activity associated with the temporary, surfaced and fenced CCS, and HDD temporary working areas, and their content of plant, materials and welfare facilities, and the temporary access roads.</p> <p>See Chapter 25 Noise and Vibration for further details regarding noise and vibration levels during construction.</p>	
Impacts related to the onshore substation	<p>Onshore substation CCS: 17,100m² (190m x 90m).</p> <p>Permanent footprint (used as CCS during construction): 36,100m² (190m x 190m).</p> <p>Substation operational access road: 13,600m² (1,700m x 8m).</p> <p>The effect on the significance of heritage assets, as a result of change in their setting, owing to the establishment and presence of the emerging onshore substation with building height up to 15m, electrical</p>	

Impact	Parameter	Notes
	<p>infrastructure height up to 18m (such as shunt reactors, transformers, harmonic filters etc).</p> <p>See Chapter 25 Noise and Vibration for further details regarding noise and vibration levels during construction.</p>	
<p>Impacts related to the National Grid Infrastructure</p>	<p>National Grid CCS: 23,350m².</p> <p>National Grid operational substation (AIS technology) (used as a CCS during construction): 44,950m² (310m x 145m).</p> <p>Temporary pylon/mast temporary working area (x4): 10,000m² (2,500m² per each temporary pylon).</p> <p>Permanent pylon permanent footprint (x4): 1,600m² (400m² per each permanent pylon).</p> <p>Permanent pylon temporary working area (x4): 8,400m² (2,100m² per each permanent pylon).</p> <p>Overhead line realignment temporary working area: 5,000m².</p> <p>Cable sealing end/Cable sealing end (with circuit breaker) compounds permanent footprint: 10,000 m² (total for three compounds)</p> <p>Cable sealing end/Cable sealing end (with circuit breaker) compounds temporary working area: 30,000m² (for three compounds)</p> <p>Temporary access road (for pylon works): (1,100m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 5,629m².</p> <p>Permanent access road to sealing end compound: 1,850m² (500m x 3.7m)</p> <p>The effect on the significance of heritage assets, as a result of change in their setting, owing to the establishment and presence of the emerging National Grid substation with Air Insulated Substation (AIS) building up to 6m in height, and external equipment to connect to the overhead line of 16m in height.</p> <p>See Chapter 25 Noise and Vibration for further details regarding noise and vibration levels during construction.</p>	<p>AIS technology is assessed as the worst case due to a larger footprint. Further detail regarding GIS technology is provided in Chapter 6 Project Description.</p>

Impact	Parameter	Notes
Operation		
Impacts related to the landfall	No impacts anticipated from landfall infrastructure during the operational phase.	
Impacts related to the onshore cable route	38 jointing bays will be installed underground, each with an operational volume of 77m ³ . 76 link boxes will be installed underground (2 per jointing bay), each with an operational volume of 4m ³ . No above ground infrastructure.	
Impacts related to the onshore substation	Operational footprint: 36,100m ² (190m x 190m). Substation operational access road: 13,600m ² (1,700m x 8m). The effect on the significance of heritage assets, as a result of change in their setting, owing to the presence of the onshore substation with buildings up to 15m in height and electrical infrastructure up to 18m.	The operational footprint does not include the additional landscaping footprint.
Impacts related to the National Grid Infrastructure	National Grid operational substation (AIS technology): 44,950m ² (310m x 145m). Pylon operational footprint (x4): 1,600m ² (20m x 20m per each permanent pylon). Cable sealing end compound operational footprint: 10,000m ² (for three sealing end compounds). Permanent access road to sealing end compound: 1,850m ² (500m x 3.7m). The effect on the significance of heritage assets, as a result of change in their setting, owing to the presence of the National Grid substation with Air Insulated Substation (AIS) building up to 6m in height, and external equipment to connect to the overhead line of 16m in height.	Four permanent pylons include up to three reconstructed/relocated pylons and up to one additional new pylon. The operational footprint does not include the additional landscaping footprint. AIS technology is assessed as the worst case due to a larger footprint. Further detail regarding GIS technology is provided in Chapter 6 Project Description .
Decommissioning		
No decision has been made regarding the final decommissioning policy for the onshore infrastructure as it is recognised that industry best practice, rules and legislation change over time. An Onshore Decommissioning Plan will be provided, as secured under the requirements of the draft DCO. The onshore substation will likely be removed and be reused or recycled. It is anticipated that the onshore cable would be decommissioned (de-energised) and either the cables and jointing bays left <i>in situ</i> or removed depending on the requirements of the Onshore Decommissioning Plan approved by the Local Planning Authority. 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. As		

Impact	Parameter	Notes
		such, for the purposes of a worst-case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase.

24.3.3 Embedded Mitigation and Best Practice

34. The proposed East Anglia ONE North project design has been developed in a manner which includes a range of embedded mitigation measures inherent as part of the proposed East Anglia ONE North project in order to avoid or reduce impacts as far as possible. For further details on the iterative design process undertaken in relation to the site selection process, project design and consultation (including feedback from communities, landowners, stakeholders and regulators), see **Chapter 4 Site Selection and Assessment of Alternatives** and **Chapter 6 Project Description**.
35. **Table 24.3** outlines the key embedded mitigation measures incorporated into the design of the proposed East Anglia ONE North project with specific regard to archaeology and cultural heritage. The impact assessment presented in **sections 24.6.1 to 24.6.3** takes account of this mitigation, which has been embedded into the proposed East Anglia ONE North project.

Table 24.3 Embedded Mitigation and Best Practice for Archaeology and Cultural Heritage

Parameter	Embedded mitigation measures relevant to the historic environment
Avoidance, Micro-siting and Route Refinement	<p>The onshore development area has undergone an extensive site selection process to avoid direct physical impacts on designated heritage assets from the outset. As such, the embedded mitigation of the proposed East Anglia ONE North project in this regard ensures that no designated heritage assets will be subject to direct physical impacts arising from the proposed East Anglia ONE North project. The woodland area to the south of Aldringham Court (Raidsend), a Grade II Listed Building, is considered within Appendix 24.7. The onshore development area has been refined to maintain a woodland buffer between Raidsend and the onshore development area; embedded mitigation reduces the onshore cable width to 16.1m at this location, in order to reduce woodland loss. This section of onshore cable route, north of Fitches Lane, will be reinstated, potentially by establishing heathland over the onshore cables, with the potential for woodland to be retained or further established along the outer edges of the onshore cable route, outside a minimum offset distance from the onshore cables (refer to the Outline Landscape and Ecological Management Strategy (OLEMS), as secured under the requirements of the draft DCO and submitted with this DCO application, for details of the post-construction planting phase at Aldeburgh Road).</p> <p>Recorded heritage assets (i.e. potential sub-surface archaeological remains recorded by the HER or identified as part of the aerial photographic and LiDAR data assessment) and the interpretation of the archaeological geophysical survey data have been fed into onshore development area refinement. This has ensured good practice was followed, falls in line and complies with HSG expectations and previous discussions in this regard (see section 24.2 and Appendix 24.1) and</p>

Parameter	Embedded mitigation measures relevant to the historic environment
	<p>ensures the proposed East Anglia ONE North project is minimising impacts on any known important (e.g. potentially substantial and complex) sub-surface archaeological remains, where possible within the confines of other environmental and engineering constraints. Archaeological considerations thereby have informed and played an active role in design decisions (and will continue to do so), with the application of preservation <i>in situ</i> and ensuring that opportunities to reduce impacts on any obvious anomalies / features / sites identified to date have been explored, wherever possible. The onshore development area has remained wider in some locations, notably at landfall (see Figure 6.6a that illustrates flexibility to site transition bays, and Figure 6.6b that illustrates flexibility to route the onshore cable route after exiting the transition bays), north of Thorpeness Road (see Figure 6.6e) and to the west of the woodland area (north of Fitches Lane) (see Figure 6.6f that illustrates flexibility to route the onshore cable route depending on the exit point from the woodland) to allow flexibility in the post-consent micro-siting of the onshore cable route in order to maintain preservation in-situ as a viable option, as further archaeological information is established through pre-construction surveys.</p> <p>Proximity to national and regional designations (Scheduled Monuments, Grade I, II* and II Listed Buildings) were considered during the onshore substation and National Grid substation location site selection process which is discussed further in Chapter 4 Site Selection.</p>
Landscape Screening and Planting	<p>An OLEMS has been submitted with this DCO application. The OLEMS outlines the requirement for landscape and ecological (including ornithological) mitigation measures that are reflective of the surveys and impact assessment carried out for the onshore infrastructure of the proposed East Anglia ONE North project.</p> <p>A final detailed Landscape Management Plan (LMP) and Ecological Management Plan (EMP) will be produced post-consent in order to discharge the relevant draft DCO requirements, prior to construction of the proposed East Anglia ONE North project, and will be in line with the OLEMS. The final LMP and EMP will provide a key mechanism, required to discharge relevant DCO requirements, through which the relevant regulatory authorities can be assured that ecological management and provision of landscaping associated with the construction of the onshore infrastructure will be formally controlled and implemented.</p> <p>The OLEMS has been developed to take into consideration historic landscape and re-establishing historic field boundaries. In areas to the immediate north of Friston, the re-establishment of historic field boundaries, filling gaps in existing hedgerows and introducing field boundary trees has been proposed to provide layered screening, rather than large-scale woodland planting close to the village. This allows the 'setting' of Friston to be retained (rather than being contained by woodland). Reinstatement of hedges with substantial gaps and new field trees are proposed to north of Friston. These proposals focus on the re-establishment of historic field boundary hedgerows / tree lines; as well as tree blocks set back from farm houses (e.g. Covert woods).</p> <p>In the area to the north of the onshore substation and National Grid substation, the OLEMS has proposed the establishment of larger woodland blocks akin to the existing pattern of woodland blocks within the wider landscape.</p>

Parameter	Embedded mitigation measures relevant to the historic environment
	<p>In relation to individual farmsteads (e.g. listed buildings), the OLEMS has proposed planting not to enclose the historic farms in woodland, as this is not how they would have been experienced in the past. The re-establishment of historically mapped tree-lined enclosures close to the farms has been proposed, to retain farms in an open farmed landscape, whilst achieving screening through multiple lines of planting.</p> <p>In addition, elsewhere across the onshore development area, wherever possible, field boundaries and hedgerows will be returned to their pre-construction condition and character post-construction. Further detail regarding hedgerow reinstatement is provided in the OLEMS.</p>
Outline WSI	<p>The proposed East Anglia ONE North project has submitted an OWSI as part of the ES to accompany the DCO application, as secured under the requirements of the draft DCO, which outlines the strategy to undertake additional programmes of survey and evaluation post-consent (to be referred to as initial informative stages of mitigation work - see section 24.3.3.1), and will include a range of likely mitigation options and responses to be utilised under various scenarios.</p> <p>In addition to the OWSI submitted with this DCO application, the proposed East Anglia ONE North project has established and is progressing a strategy to undertake initial targeted archaeological and cultural heritage investigation works to inform the post-consent mitigation strategy, in relation to the archaeological and cultural heritage resource (see Table 24.3). The scope and approaches to such works are outlined in three survey-specific WSIs appended to the OWSI, as consulted on with the HSG. The surveys relate to:</p> <ul style="list-style-type: none"> • A programme of targeted archaeological trial-trenching; • Metal detecting survey; and • Earthwork identification survey. <p>In addition to the OWSI submitted with this DCO application, the Proposed East Anglia ONE North project has submitted an Outline Pre-Commencement Archaeology Execution Plan with this DCO application. A requirement of the draft DCO states that no intrusive pre-commencement archaeological surveys, site preparation works or archaeological investigations may be carried out until the execution plan in respect of those surveys, works or investigations has been submitted to and approved by the relevant Local Planning Authority.</p>

36. As well as informing discussions regarding onshore development area refinement and micro-siting, the archaeological assessment of geophysical survey data also serves to identify the potential to uncover buried archaeological remains which are, at present, unknown.
37. Where impacts upon known heritage assets are unavoidable, a series of mitigation measures will be put in place to reduce (minimise) or offset (e.g. compensatory measures to record remains) the scale of the impact (see **section 24.3.3.1**).

24.3.3.1 Additional Mitigation

38. Additional mitigation measures will ultimately be tailored in a bespoke manner, in response to the assessment with respect to archaeology and cultural heritage alongside the results of post-application / investigations (see **section 24.4.2, Table 24.6, Table 24.3** and the OWSI submitted with this DCO application for further details). This approach enables mitigation recommendations to be made in a manner which is both appropriate and proportionate to the known and potential archaeological and cultural heritage resource, as indicated by available data, and on a case-by-case / area-by-area basis.

24.3.3.1.1 Additional Mitigation Requirements

39. Subsequent mitigation requirements are expected to comprise a combination of the following recognised standard approaches both in advance of and / or during construction:

- Set-Piece (Open-Area) Excavation (SPE);
- Strip, Map and Sample Excavation (SMS);
- Archaeological Monitoring / Watching Brief;
- Preservation In-Situ;
- Sensitive and Precautionary Approaches to Construction Works;
- Temporary Suspension of Works in the Event of an Archaeological Discovery; and
- Reinstatement of Field Boundaries and Hedgerows.

40. Subsequent mitigation requirements will be formally agreed with East Suffolk Council as part of separate pre-construction and construction related WSIs in consultation with SCCAS (and HE, as required) and undertaken in compliance with the Standards for Field Archaeology in the East of England (Gurney 2003) and the SCCAS guidance on the requirements for each survey-specific scheme of archaeological investigation, as and where relevant (SCCAS 2017a-d).

24.3.3.1.2 Protocol for Archaeological Discoveries

41. In addition to those potential mitigation approaches set out in the text above, at times when intrusive groundworks are being carried out in the absence of an archaeologist, a procedure on reporting archaeological discoveries will be implemented. The protocol procedures and processes are outlined in the Offshore Windfarms Archaeological Protocol document (SPR 2015), which is based upon the Offshore Renewables Protocol for Archaeological Discoveries (ORPAD) (The Protocol) (The Crown Estate 2014).

42. The Offshore Windfarms Archaeological Protocol (hereafter referred to as the Protocol for Archaeological Discoveries – PAD) applies to all contractors and sub-contractors working on an offshore project for Scottish Power Renewables (SPR). Although the PAD refers primarily to offshore schemes of development, it also applies to onshore elements of the work for which there is no specific watching brief (SPR 2015). The main objective of the PAD will be to reduce / offset direct impacts from occurring on currently unrecorded heritage assets by enabling people working on the proposed East Anglia ONE North project to report unexpected archaeological discoveries in a manner that is conducive to their everyday work and that allows for efficient reporting so that archaeological advice can be provided in a timely manner. Should a significant archaeological discovery be reported (as assessed on a case-by-case basis in consultation with the Archaeological Contractor, Archaeological Consultant, SCCAS and HE, as applicable), groundworks would continue elsewhere until the remains have been subject to appropriate archaeological investigation and any further requirements from an archaeological perspective ascertained and undertaken. In the event of such a discovery, archaeological requirements and necessary ‘next steps’ will be agreed in consultation with SCCAS and HE, as applicable.
43. Training to construction staff, site crews and work teams with regard to the practical application of the protocol in their day to day work can be provided by a sufficiently experienced and qualified Archaeological Contractor. Hard copies of the PAD document will be made available for use at each mobilisation area and / or construction compound.
44. Further details regarding the application of the PAD will be included in a WSI specific to the construction related package(s) of works considered to require the application of this type of mitigation measure. An OWSI (including reference to the PAD) has been submitted with the DCO application.

24.3.4 Monitoring

45. Post-consent, the final detailed design of the proposed East Anglia ONE North project will refine the worst-case parameters assessed in this ES. It is recognised that monitoring is an important element in the management and verification of the actual impacts based on the final detailed design. Where monitoring is proposed for archaeology and cultural heritage, this is described in the OWSI submitted with this DCO application (document reference 8.5). Final details of monitoring will be agreed post-consent with the Local Planning Authority and relevant stakeholders.

24.4 Assessment Methodology

46. The following sections set out the assessment methodology used to assess baseline conditions for archaeology and cultural heritage within the study areas and the approach to identifying and evaluating potential impacts upon the historic environment arising as a result of the proposed East Anglia ONE North project.

24.4.1 Guidance

24.4.1.1 Legislation and Policy

47. The NPSs (the principal decision making documents for Nationally Significant Infrastructure Projects (NSIPs)), of relevance to the proposed East Anglia ONE North 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).
48. **Table 24.4** sets out how specific NPS policies relevant to archaeology and cultural heritage are addressed within this chapter.

Table 24-4 NPS Assessment Requirements for the Historic Environment

NPS requirement	NPS reference	ES reference
EN-1 Overarching NPS for Energy		
<p><i>'As part of the 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.'</i></p>	Section 5.8.8	<p>A heritage settings assessment has been undertaken and informs this chapter. A preliminary heritage settings assessment was undertaken as part of the ADDBA and is detailed in Appendix 24.3. This assessment identified heritage assets where there is potential for their heritage significance to be harmed by change in their settings due to the proposed East Anglia ONE North project and includes preliminary statements summarising the heritage significance of each asset with a focus on the contribution made by the setting. The assessment has since been progressed as part of a full onshore settings assessment (Appendix 24.7), the results of which inform and are summarised within sections 24.5 and 24.6 of this chapter, as relevant. A screening exercise has also been undertaken which considers the impact of offshore infrastructure on the significance of coastal heritage assets (Appendix 24.8). this chapter</p>
<p><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.</i></p> <p><i>Where proposed development will affect the setting of a heritage asset, representative visualisations may be necessary to explain the impact'.</i></p>	Section 5.8.9	<p>An ADDBA has been undertaken (Appendix 24.3) and informs this chapter. This ADDBA has included a walkover survey to confirm the location of known heritage assets and to examine other features of possible archaeological interest (e.g. as indicated in Aerial Photographic and LiDAR data). The ADDBA also includes a preliminary settings assessment which has been progressed using available landscape and visual assessment tools-kits (e.g. ZTVs and photomontages). The assessment has since been progressed as part of a full onshore settings assessment (Appendix 24.7). The ADDBA and subsequent settings assessment both inform and are summarised within sections 24.5 and 24.6 of this chapter, as relevant. A screening exercise has also been undertaken which addresses the impact of offshore infrastructure on the significance of coastal heritage assets (Appendix 24.8). this chapter. In</p>

NPS requirement	NPS reference	ES reference
		<p>addition, a geophysical survey has been undertaken to gather information to establish the presence / absence, character and extent of any archaeological remains within the onshore development area, and to inform further strategies should they be necessary. The results of this assessment have been included as part of this chapter (section 24.5). The results of the archaeological assessment of geophysical survey data (where available) has been fed into onshore development area refinement.</p> <p>The acquisition and archaeological assessment of further geophysical survey data (in areas of the onshore development area where access was not previously possible) will be undertaken as described in Table 24.3 - the results of these surveys will serve to inform and contribute to the development of post consent mitigation strategies in relation to the archaeological and cultural heritage resource.</p>
<p><i>'The applicant should ensure that the extent of the impact of the proposed development on the significance of any heritage assets affected can be adequately understood from the application and supporting documents.'</i></p>	<p>Section 5.8.10</p>	<p>This ES provides an account of the potential impact of the proposed East Anglia ONE North project upon the significance of heritage assets (section 24.6). This chapter has been informed by an ADBA (see Appendix 24.3 – including aerial photographic / LiDAR data assessment, walkover survey results and initial heritage settings assessment), as well as subsequent settings assessment work (Appendices 24.7 and 24.8). The results of the geophysical survey (Appendix 24.4) also informs this chapter.</p> <p>The acquisition and archaeological assessment of further geophysical survey data (in areas of the onshore development area where access was not previously possible) will be undertaken as described in Table 24.3 - the results of these surveys will serve to inform and contribute to the development of post consent mitigation strategies in relation to the archaeological and cultural heritage resource.</p>

NPS requirement	NPS reference	ES reference
<p><i>'In considering applications, the Infrastructure Planning Commission (IPC) [now the Examining Authority and the Secretary of State] should seek to identify and assess the particular significance of any heritage asset that may be affected by the proposed development, including by development affecting the setting of a heritage asset, taking account of:</i></p> <ul style="list-style-type: none"> • <i>Evidence provided with the application;</i> • <i>Any designation records;</i> • <i>The Historic Environment Record, and similar sources of information;</i> • <i>The heritage assets themselves;</i> • <i>The outcome of consultations with interested parties; and</i> • <i>Where appropriate and when the need to understand the significance of the heritage asset demands it, expert advice'</i> 	<p>Section 5.8.11</p>	<p>This ES identifies the heritage importance of those assets which comprise the baseline in sections 24.5.2.4 and 24.5.3.4 (see section 24.4.4.1 for further detailed discussion of the relationship between heritage significance and importance and how it is addressed in this chapter). Further information regarding heritage importance (and associated heritage significance) is provided in Appendices 24.3, 24.7 and 24.8. This chapter also assesses the potential for impacts to occur upon the archaeology and cultural heritage resource as a result of the proposed East Anglia ONE North project, including a consideration of how this heritage importance is affected (section 24.6). Section 24.6 includes tables which summarise the importance of any heritage asset identified as part of this assessment that may be affected by the proposed East Anglia ONE North project (Table 24.15 to Table 24.20) with an overall summary table presented at the end of the document (Table 24.26). Impacts of a direct (e.g. physical) and indirect (e.g. non-physical, associated with a change in the setting of heritage assets) nature are considered within the context of the proposed East Anglia ONE North project in a manner that is proportionate to those assets present (and their perceived heritage importance and associated heritage significance). This approach is outlined in section 24.4 with the baseline conditions set out in section 24.5 and assessment detailed in sections 24.6 and 24.7.</p>
<p><i>'In considering the impact of a proposed development on any heritage assets, the IPC [now the Examining Authority and the Secretary of State] should take into account the particular nature of the significance of the heritage assets and the value that they hold for this and future generations. This understanding should be used to avoid or minimise conflict between conservation of that significance and proposals for development.'</i></p>	<p>Section 5.8.12</p>	<p>Heritage importance (and associated significance) is identified and assigned in line with the methodology set out in section 24.3.3 based on available data. With regards to potential below ground remains, this data is predominantly non-intrusive in nature and as such, heritage importance (and associated heritage significance) is based on professional judgement and experience, rather than any fully substantiated and established levels of heritage significance, as part of intrusive ground truthing for instance. On this basis, a precautionary approach</p>

NPS requirement	NPS reference	ES reference
		has been adopted which will be further substantiated following further archaeological evaluation approaches (e.g. intrusive evaluation approaches such as trial-trenching).
<p><i>'The IPC [now the Examining Authority and the Secretary of State] should take into account the desirability of sustaining and, where appropriate, enhancing the significance of heritage assets, the contribution of their settings and the positive contribution they can make to sustainable communities and economic vitality... This can be by virtue of:</i></p> <ul style="list-style-type: none"> • <i>Heritage assets having an influence on the character of the environment and an area's sense of place;</i> • <i>Heritage assets having a potential to be a catalyst for regeneration in an area, particularly through leisure, tourism and economic development;</i> • <i>Heritage assets being a stimulus to inspire new development of imaginative and high quality design;</i> • <i>The re-use of existing fabric, minimising waste; and</i> • <i>The mixed and flexible patterns of land use in historic areas that are likely to be, and remain, sustainable.</i> <p><i>...The IPC [now the Examining Authority and the Secretary of State] should take into account the desirability of new development making a positive contribution to the character and local distinctiveness of the historic environment. The consideration of design should include scale, height, massing, alignment, materials and use. The IPC [now the Examining Authority and the Secretary of State] should have regard to any relevant local authority development plans or local impact report on the proposed development in respect of the factors set out [above]'</i></p>	Section 5.8.13	<p>In order to assess the positive contributions of the proposed East Anglia ONE North project in the context of archaeology and cultural heritage, the magnitude of positive impact has also been subject to consideration in this chapter. The magnitude of positive impact directly relates to the level of public value associated with an individual beneficial impact and may correspond directly to the proposed East Anglia ONE North project itself (e.g. where a project will enhance the historic environment and / or public understanding by adding to the archaeological record). This is discussed in section 24.6).</p> <p>Opportunities to minimise harm to the onshore historic environment (e.g. by means of onshore development area refinement / onshore cable corridor siting which seek to avoid heritage assets and other design approaches and measures) have been considered and developed as the proposed East Anglia ONE North project has progressed in the pre-application stages, with feedback from community and stakeholder consultation taken on-board, wherever possible.</p> <p>This chapter takes account of the policies set out in the Suffolk Coastal Local Plan (Policies SCLP 11.3 Historic Environment, SCLP 11.4 Listed Buildings, 11.5 Conservation Areas and 11.6 Archaeology) and the Waveney Local Plan (Policies WLP8.37 Historic Environment and WLP8.40 Archaeology) (see also section 24.4.1 and Chapter 3 Policy and Legislative Context).</p>
<p><i>'There should be a presumption in favour of the conservation of designated heritage assets and the more significant the designated heritage asset, the greater the presumption in favour</i></p>	Section 5.8.14	The onshore development area will avoid any direct physical impacts upon (designated heritage assets (e.g. listed buildings / scheduled monuments) and as such, no direct physical impacts

NPS requirement	NPS reference	ES reference
<p><i>of its conservation should be. Once lost heritage assets cannot be replaced and their loss has a cultural, environmental, economic and social impact. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. Loss affecting any designated heritage asset should require clear and convincing justification. Substantial harm to or loss of a grade II listed building, park or garden should be exceptional. Substantial harm to or loss of designated assets of the highest significance, including Scheduled Monuments; registered battlefields; grade I and II* listed buildings; grade I and II* registered parks and gardens; and World Heritage Sites, should be wholly exceptional.'</i></p>		<p>are anticipated to occur to designated heritage assets (section 24.5.2).</p> <p>Indirect (non-physical) impacts upon heritage significance as a result of change in the setting of heritage assets are assessed in section 24.6 (with further detail in Appendices 24.3, 24.7 and 24.8).</p>
<p><i>'Any harmful impact on the significance of a designated heritage asset 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 will be needed for any loss. Where the application will lead to substantial harm to or total loss of significance of a designated heritage asset the IPC [now the Secretary of State] should refuse consent unless it can be demonstrated that the substantial harm to or loss of significance is necessary in order to deliver substantial public benefits that outweigh that loss or harm.'</i></p>	Section 5.8.15	<p>The onshore development area will avoid any direct physical impacts upon designated heritage assets (e.g. listed buildings / scheduled monuments) (section 24.5.2). Indirect (non-physical) impacts upon heritage significance as a result of change in the setting of heritage assets are assessed in section 24.6 (with further detail in Appendices 24.3, 24.7 and 24.8).</p>
<p><i>'Not all elements of a World Heritage Site or Conservation Area will necessarily contribute to its significance. The policies set out in paragraphs 5.8.11 to 5.8.15 above apply to those elements that do contribute to the significance. When considering proposals, the IPC should take into account the relative significance of the element affected and its contribution to the significance of the World Heritage Site or Conservation Area as a whole.'</i></p>	Section 5.8.16	<p>The onshore development area will avoid any direct physical impacts upon World Heritage Sites and Conservation Areas. In addition, there are no examples of World Heritage Sites or Conservation Areas within the study areas assessed where there would be impacts as a result of change in the setting of heritage assets (see Appendix 24.3).</p>

NPS requirement	NPS reference	ES reference
<p><i>'Where loss of significance of any heritage asset is justified on the merits of the new development, the IPC [now the Secretary of State] should consider imposing a condition on the consent or requiring the applicant to enter into an obligation that will prevent the loss occurring until it is reasonably certain that the relevant part of the development is to proceed.'</i></p>	<p>Section 5.8.17</p>	<p>This chapter has concluded that the predicted residual impacts on the heritage significance of heritage assets as a result of changes to their setting due to the proposed East Anglia ONE North project will range from no impact to a moderate adverse significance of effect (the latter in the case of two heritage assets only, in relation to Little Moor Farm and the Church of St. Mary, Friston). Details of this assessment are provided in Appendix 24.7 and summarised in section 24.6 of this chapter. This conclusion has been based on the results of a detailed settings assessment, informed by site visits and the incorporation and use of landscape and visual tool-kits (e.g. ZTV and photomontages), with respect to heritage setting.</p> <p>The significance of non-designated heritage assets has been established through an ADBA (see Appendix 24.3 – including aerial photographic / LiDAR data assessment, walkover survey results and initial heritage settings assessment) and subsequent settings assessment (Appendices 24.7 and 24.8) and has also been informed by the archaeological assessment of geophysical survey data (Appendix 24.4).</p>
<p><i>'When considering applications for development affecting the setting of a designated heritage asset, the IPC [now the Examining Authority and the Secretary of State] should treat favourably applications that preserve those elements of the setting that make a positive contribution to, or better reveal the significance of, the asset. When considering applications that do not do this, the IPC [now the Examining Authority and the Secretary of State] should weigh any negative effects against the wider benefits of the application. The greater the negative impact on the significance of the designated heritage asset, the greater the benefits that will be needed to justify approval.'</i></p>	<p>Section 5.8.18</p>	<p>This chapter has concluded that the predicted residual impacts on the heritage significance of heritage assets as a result of changes to their setting due to the proposed East Anglia ONE North project will range from no impact to a moderate adverse significance of effect (the latter in the case of two heritage assets only, in relation to Little Moor Farm and the Church of St. Mary, Friston). Details of this assessment are provided in Appendix 24.7 and summarised in section 24.6 of this chapter. This conclusion has been based on the results of a detailed settings assessment, informed by site visits and the incorporation and use of landscape and visual tool-kits (e.g. ZTV and photomontages), with respect to heritage setting.</p>

NPS requirement	NPS reference	ES reference
EN-3 NPS for Renewable Energy Infrastructure		
<i>'Consultation with the relevant statutory consultees should be undertaken by the applicants at an early stage of the development.'</i>	Section 2.6.140	Regular consultation has been, and will continue to be, undertaken with the HSG (through the relevant stages of pre-determination, post-consent and discharging of draft DCO requirements), see section 24.2 and Appendix 24.1 .
<i>'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 windfarm design.'</i>	Section 2.6.141	This chapter has been undertaken in accordance with section 5.8 of EN-1, as detailed above. It has also been informed by an ADBA (Appendix 24.3) and the archaeological assessment of geophysical survey data (acquired across 64% of the onshore development area). It is further proposed that an archaeological watching brief / geoarchaeological monitoring be undertaken on any engineering-led Ground Investigation (GI) works to inform upon potential deposits of geoarchaeological / archaeological interest, as part of a scheme-wide approach to geoarchaeological survey to be undertaken in the post-consent stages of the proposed East Anglia ONE North project.

49. This chapter has also been undertaken to meet the objectives of the NPPF, a revised version of which was published by the Ministry of Housing, Communities and Local Government (MHCLG) in February 2019, replacing earlier versions. 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*”. 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 2019).
50. The aim of NPPF Section 16 is to ensure that Regional Planning Bodies and Local Planning 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.
51. To summarise, 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;
 - Regard 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.

52. The NPPF's associated PPG 'Conserving and enhancing the historic environment' (MHCLG) updated 2018) includes further information and guidance on how national planning policy is to be interpreted and applied locally. Although the NPPF and associated PPG are an important and relevant consideration in respect to this project, NPS EN-1 is the key decision-making document.
53. Works affecting Listed Buildings and Conservation Areas are subject to the Planning (Listed Buildings and Conservation Areas) Act 1990 ("PLBCAA"), 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.
54. 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 (SoS) 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 PLBCAA 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 location of the onshore development area falls within the administrative area of SCC and East Suffolk Council (ESC), which is the merger of SCDC and Waveney District Council (WDC), which became effective from 1st April 2019. To ensure a robust assessment has been undertaken, the local plan for WDC has also been considered alongside the new ESC local plan. Local policies and key objectives relevant to the historic environment within the study area are as follows:
- ESC Suffolk Coastal Final Draft Local Plan (2019); and
 - WDC new Local Plan (WDC 2018).
55. Further details can be found in **Chapter 3 Policy and Legislative Context**.

24.4.1.2 Assessment Guidance

56. In demonstrating adherence to industry good practice, this chapter has also been undertaken in accordance with the following relevant standards and guidance:
- Conservation Principles: For the Sustainable Management of the Historic Environment (Consultation Draft 10th November 2017, Historic England 2017a);
 - Chartered Institute for Archaeologists (CIfA) (updated 2017) Standards and guidance, including Standard and guidance for historic environment desk-based assessment;

- The Historic Environment in Local Plans: Historic Environment Good Practice Advice (GPA) in Planning Note 1 (Historic England 2015);
- Managing Significance in Decision-Taking in the Historic Environment: Historic Environment GPA in Planning Note 2 (Historic England 2015a); and
- The Setting of Heritage Assets: Historic Environment GPA in Planning Note 3 (Second Edition) (Historic England 2017).

24.4.2 Data Sources

57. The baseline conditions (i.e. the existing environment) set out in this chapter have been established based on the results of a detailed ADBA (**Appendix 24.3**). The ADBA was undertaken to inform the archaeology and cultural heritage baseline, utilising the following sources of data shown in **Table 24.5**.

Table 24.5 Desk-Based Data Sources to Inform the Assessment

Data	Source
Recorded archaeological sites, historic buildings and find spots within Suffolk (obtained as a digital data extract on 22 nd May 2019).	Suffolk Historic Environment Record (SHER) maintained by SCCAS.
Historic Landscape Characterisation (HLC) mapping data (obtained as a digital data extract on 22 nd May 2019).	Suffolk HER maintained by SCCAS.
National Mapping Programme (NMP) Data (obtained as a digital data extract on 22 nd May 2019).	Suffolk HER maintained by SCCAS.
Designated heritage assets across England (downloaded from the Historic England website in May 2019).	National Heritage List online maintained by Historic England.
Recorded archaeological sites and historic buildings across England (obtained as a digital data extract on 4 th July 2018).	The National Record for the Historic Environment (NRHE) / Historic England Archive maintained by Historic England.
Archaeological (web-based) mapping of recorded archaeological sites, historic buildings and find spots within Suffolk.	Suffolk Heritage Explorer online mapping maintained by SCCAS.
Conservation areas within the district council areas, listed buildings, locally listed buildings (including non-designated heritage assets that are buildings or structures) and locally listed parklands / landscapes.	East Suffolk District Council (Suffolk Coastal and Waveney Councils in Partnership).
Historic maps and plans.	The Suffolk Archives (Ipswich Branch).
Historic Ordnance Survey (OS) maps.	National Library of Scotland website / maps.nls.uk.
Aerial Images / Photography (including historical imagery).	Historic England Archive, Swindon / NMP / APEM fly over.

Data	Source
LiDAR Data.	Environment Agency / environment.data.gov.uk.
Findings reported through the Portable Antiquities Scheme (PAS) (where appropriate, and not directly duplicated with information and data held by the Suffolk HER) (supplied by Suffolk HER on 22 nd May 2019).	Suffolk HER / the PAS database.
Regional, Local and Period Archaeological Studies and Journals.	Various. Including those outlined in Appendix 24.3, Section 6.
Data regarding previous archaeological investigations in the study area.	Suffolk HER; and The Archaeology Data Service (ADS).
Other documentary sources relevant to the archaeological and historical background of the study area.	Various (documentary and internet sources). Including: opendomesday.org; and www.british-history.ac.uk.
Geological data.	British Geological Survey (BGS) data.
Rapid Coastal Zone Assessment data.	NMP.

58. In addition to the desk-based data sources outlined above, the ADBA was informed by a walkover and various site visits undertaken by Headland Archaeology. A walkover of the accessible areas (see **section 3.6** and **Figure 2** in **Appendix 24.3**) of the earlier proposed onshore development area was carried out by Headland Archaeology between 9th and 13th July 2018 to confirm the location and condition of known and potential heritage assets identified during the baseline data gathering. Site visits by Headland Archaeology, with a view to giving specific consideration of setting, were also undertaken to examine the baseline setting of all heritage assets listed within the settings study because they were identified as having the potential for changes to their setting (and associated heritage significance) as a result of the proposed East Anglia ONE North project (as reported on as part of the preliminary settings assessment in **Appendix 24.3**). Additional site visits were also undertaken on the 7th and 8th March 2019 and with the ETG on the 17th April 2019 to further inform the settings assessment as it progressed between PEIR and ES (see **Appendices 24.7** and **24.8** for further detail).
59. As part of the EIA process, a number of data gathering and survey campaigns were undertaken to support the DCO application and post-consent detailed design stages of the proposed East Anglia ONE North project. Survey data which has been or will be acquired and archaeologically assessed are presented in **Table 24.6**.

Table 24.6 Survey Data Sources

Data	Year	Coverage	Confidence	Notes
Geophysical (magnetometer - gradiometer) survey data ¹ .	2018 / 2019	Geophysical survey coverage across the majority of the onshore development area (and originally a wider area under consideration), where accessible – covering 455 ha.	High. ²	Geophysical data acquired and archaeologically assessed inform this chapter. A report of results is included as Appendix 24.4 .
Archaeological Metal Detecting Survey*.	Forthcoming (anticipated late summer / early autumn 2019, access dependent)	Targeted (Fields HE-02 and WR-08).	Not yet undertaken or determined.	Proposed to be conducted over targeted areas. Subject to a survey-specific WSI (see the OWSI submitted with this DCO application), prepared in consultation with SCCAS.
Trial-trenching*.	Forthcoming (anticipated late summer / early autumn 2019, access dependent)	Targeted (summer / early autumn 2019). Project-wide (post-consent).	Not yet undertaken or determined.	Proposed to be conducted over initial targeted areas. Subject to a survey-specific WSI (see the OWSI submitted with this DCO application), prepared in consultation with SCCAS. A full and comprehensive programme of trial trenching will be planned, programmed,

¹ Areas not previously accessible will be subject to geophysical survey at a later date (anticipated late summer / early autumn 2019), with results informing the post consent mitigation design, land access dependent.

² Ground conditions were generally good across the survey areas and the data quality correspondingly good throughout, with two instances of poor data quality due to sensor errors when working close to the high voltage overhead cables. Archaeological anomalies have been identified across all soil types and on all the different superficial geologies. It has therefore been assessed that the results provide a reliable indication of the extent of all the significant areas of sub-surface archaeological remains within the onshore development area.

Data	Year	Coverage	Confidence	Notes
				agreed and undertaken post-consent, in ongoing discussion with the HSG (specifically SCCAS).
Earthwork Identification Survey*.	Forthcoming (anticipated late summer / early autumn 2019, access dependent)	Targeted.	Not yet undertaken or determined.	Proposed to be conducted over targeted areas. Subject to a survey-specific WSI (see the OWSI submitted with this DCO application), prepared in consultation with SCCAS. Note: the initial stages of the earthwork identification survey were undertaken as part of the ADBA walkover (Appendix 24.3).
* Although such investigatory works will not be completed in time for the results to inform and be incorporated within this chapter, it has been agreed with the HSG that the results will ultimately serve to inform and contribute to the development of post-consent mitigation strategies in relation to the archaeological and cultural heritage resource.				

24.4.2.1 Desk-Based Data Sources Limitation

60. Desk-based data sources, as included in **Table 24.6**, e.g. SHER and NRHE rely on non-designated heritage assets being identified, recorded and reported. Dependant on how much archaeological work has been undertaken in an area and whether all finds have been reported, limits what level of records may be held within these record repositories. Similarly, currently unknown heritage assets are being found regularly, as part of new developments or new local research.

24.4.3 Assessment Methodology

24.4.3.1 Establishing the Baseline Environment

61. The baseline environment as set out in this chapter is based on findings presented within the ADBA (**Appendix 24.3**), which comprised an archaeological and historical information gathering exercise and initial assessment informed by a range of data sources (see **section 24.4.2, Table 24.5**).
62. The ADBA comprises an account of the known archaeological and cultural heritage resource (including designated and non-designated heritage assets) and a summary of the potential for currently unrecorded sites (assets) and finds to exist within and surrounding the onshore development area, as well as a review of the historic landscape. Baseline conditions presented within the ADBA are supported and informed by a review of various records, data and information sources, aerial photographic and Light Detection and Ranging (LiDAR) data analysis, the initial heritage settings assessment work, and field reconnaissance surveys (comprising site walkovers and specific site visits). Historic map resources were also subject to scrutiny, as part of a map regression exercise.

24.4.3.1.1.1 Sub-surface Archaeological Remains

63. The baseline conditions set out below with regards to potential below ground remains are based on potential as indicated by available data. To date, this includes the scrutiny of a range of data sources (see **section 24.4.2, Table 24.5**) and the archaeological assessment of geophysical survey data acquired across 64% of the onshore development area (this relates to approximately 61% of the landfall location, 88% of the onshore cable corridor, 90% of the onshore substation and National Grid substation location (with the remaining areas not surveyed to date predominantly comprising those areas of land that are either not accessible and/or conducive for survey such as areas of woodland and areas beneath the overhead line realignment area)) (see **Appendix 24.4**). This report, identifying Areas of Archaeological Activity (AAAs) within survey data (**Appendix 24.4**), informs this chapter.

24.4.3.1.1.2 Above Ground Archaeological Remains

64. Those heritage assets considered to represent above ground archaeological remains have been identified based on their description in the HER and / or NRHE data records or those assessed as part of the aerial photographic / LiDAR data review undertaken as part of the ADBA (see **Appendix 24.3**). Those identified and assessed within this chapter also take into account the walkover survey results. The walkover was undertaken with the aim of confirming the locations of heritage assets identified in the HER and NRHE datasets, examining features of possible archaeological interest identified during the aerial photographic, LiDAR and historic map study and identifying any other features of potential archaeological interest. No additional features of interest beyond those already identified in the desktop study were identified during the walkover.
65. The assessments undertaken (including the ADBA, **Appendix 24.3**) have indicated that the onshore cable corridor passes through a landscape of some archaeological interest with respect to above ground archaeological remains (e.g. earthworks and structures).

24.4.3.2 Settings Assessment Approach

66. This section provides a high-level summary of the setting assessments / exercises undertaken for the East Anglia ONE North project. A further detailed account of the approach to assessment is set out in **Appendices 24.3, 24.7** and **24.8**, as relevant.
67. The settings assessment adopts the staged approach to proportionate decision taking recommended by Historic England in its guidance on the *Setting of Heritage Assets* ('GPA3', Historic England 2017, page 9). Step 1 has been carried out and reported on within the ADBA (**Appendix 24.3**), the results of which were submitted as part of the PEIR chapter. The settings assessment was later progressed as part of two separate exercises (**Appendices 24.7** and **24.8**), which address the impact of onshore infrastructure in the setting of heritage assets and the impact of offshore infrastructure on the significance of coastal heritage assets (a screening exercise).
68. The onshore settings assessment addresses the refined onshore development area and was undertaken in consultation with the HSG. The settings assessment which has sought to address the impact of onshore infrastructure in the setting of heritage assets further progresses the approach recommended by Historic England, addressing Steps 2 to 4 of that process. The onshore settings assessment approach and findings are detailed in **Appendix 24.3** and **24.7** respectively.

69. Three different development scenarios were considered as part of the onshore settings assessment, both with and without landscape mitigation in order to illustrate the ‘worst-case’ impact without mitigation and the residual impact with landscape mitigation proposals implemented. These scenarios are:
- The proposed East Anglia ONE North project alone;
 - The proposed East Anglia TWO project alone; and
 - The proposed East Anglia ONE North and East Anglia TWO projects cumulatively.
70. With respect to a consideration of the impact of offshore infrastructure on the significance of coastal heritage assets, a screening exercise has been undertaken. A study area was selected that extended up to 40km from the closest wind turbine in respect to the East Anglia ONE North and East Anglia TWO windfarm sites. This included the coast from Gorleston in the north (Norfolk) to Orford Ness in the south (Suffolk) and extended up to 9km inland. Bare-ground modelling predicts extensive visibility of wind turbines inland from the coast, but it is clear that, in practice, screening by intervening vegetation and built form would eliminate any substantive visual change away from the coast. It is concluded that there is no potential for impacts on the significance of heritage assets away from the immediate vicinity of the coastline. Detailed consideration of designated heritage assets on the coast identified a variety of ways in which the presence of the sea, or sea views, in the setting of coastal assets can contribute to their significance. These are discussed further in **Appendix 24.8** alongside conclusions drawn from the results and analysis undertaken.

24.4.4 Impact Assessment Methodology

71. The general impact assessment methodology adhered to for the proposed East Anglia ONE North project as a whole is detailed in **Chapter 5 EIA Methodology**. The following sections describe more specifically the methodology used to assess the potential impacts of the proposed East Anglia ONE North project on archaeology and cultural heritage, as discussed in consultation with the HSG (see **section 24.2** and **Appendix 24.1**).
72. The impact assessment methodology adopted for archaeology and cultural heritage has, as far as possible, identified and defined those assets likely to be impacted by the proposed project. The assessment is not limited to direct physical impacts, but also assesses impacts resulting from change in the setting of designated and non-designated heritage assets, whether visually, or in the form of noise and vibration, and dust, as well as spatial associations and a consideration of historic relationships between places.

73. More specifically the impact assessment presents:
- The perceived heritage importance of identified assets;
 - A consideration of heritage significance, and where relevant the contribution that setting makes to the heritage significance of the assets identified as being affected, both designated and non-designated;
 - The anticipated magnitude of impact (change to heritage significance) upon those assets identified; and
 - The significance of effect (in EIA terms) of any identified impacts upon those assets identified.
74. The impact assessment methodology adopted differs from some of the more standard approaches and terminology used and applied more generally within the ES for other technical disciplines. The standardised and tailored EIA matrices provide a useful guidance framework for the expert judgement by suitably experienced and qualified heritage practitioners based on the heritage specific legislation, policy and guidance documents available, and using the fundamental concepts from the NPSs and NPPF of benefit, harm and loss.
75. Some of the impact assessment methodology terminology has been updated and revised between the production of the PEIR and ES. This exercise has been undertaken primarily to:
- Address certain specific and general stakeholder comments and feedback (**Appendix 24.1**), some of which relate to the use of and over-reliance on matrix-based approaches, when reasoned analysis and narrative is often more appropriate and in-line with recent heritage specific guidance coming from e.g. Historic England (note: a combination has been used in the assessment);
 - Ensure greater consistency between the onshore settings assessment undertaken within **Appendices 24.3** and **24.7** and the associated impact assessment terminology and definitions used in this chapter, as well as other archaeological and cultural heritage assessment primarily undertaken within this chapter itself, with reference to the ADBA (**Appendix 24.3**) and geophysics survey report (**Appendix 24.4**); and
 - Incorporate some emerging principles of good practice from dialogue with members of the Institute of Environmental Management and Assessment (IEMA) Heritage Advisory Group, yet to be articulated in published form.

24.4.4.1 Heritage Significance v Heritage Importance

76. Although not yet articulated in any published form, emerging good practice makes the following distinction between the terms heritage significance and heritage importance.
77. 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 (NPPF 2019, Annex 2). A statement of heritage significance should explain why we value a heritage asset. Understanding the heritage significance of an asset should not be confused with a description of that asset which does not articulate 'what matters and why'.
78. Heritage significance does not have a scale associated with it and it is therefore not appropriate to refer to 'high' or 'low' heritage significance. This scaling is addressed through the separate consideration of a heritage asset's importance. Heritage 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.
79. The importance of a heritage asset is a measure of the degree to which we seek to protect and preserve the heritage 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, as well as conclusions regarding the significance of effect (in EIA terms) once combined with assessed magnitude of impacts on heritage significance.
80. Importance is scaled (unlike heritage 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.
81. With respect to the setting of heritage assets and how setting may or may not contribute to heritage significance, this is dealt with in detail in **Appendix 24.7**.

24.4.4.2 Sensitivity (Heritage Importance)

82. The sensitivity of a receptor (in EIA) is essentially 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 significance as a result of change in its setting 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 a heritage asset cannot recover. On this basis, the assessment of the significance of any identified impact is a product of the heritage importance of an asset and the magnitude of the impact on it, assessed and qualified by professional judgement.

83. An assessment of impacts and associated effects on an asset involves an understanding of the heritage importance of the asset and, in the case of an impact associated with a change in the setting of that asset, the contribution that the setting makes to the heritage significance of the asset. Policy sets out that the level of detail should be proportionate to the importance of the heritage asset and no more than is sufficient to understand the potential impact of the proposed project on their significance (NPPF paragraph 189, 2019).
84. The initial indicative criteria for determining the heritage importance of any relevant heritage assets are described in **Table 24.7**.
85. 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.
86. Establishing heritage importance (or likely heritage importance) of an asset or group of assets, and the related significance of effect by considering the perceived magnitude of impact on the asset or assets, assists in the development of appropriate evaluation and mitigation approaches. It is important to note that the heritage importance and heritage significance of an asset can be amended or revised as more information comes to light.
87. **Table 24.7** 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 24.7** 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 archaeological impact assessment and reduces the potential for impacts to be under-estimated.

Table 24.7 Indicative Criteria for Determining Heritage Importance

Heritage Importance	Definition
High (perceived International / National Importance)	World Heritage Sites Scheduled Monuments Grade I and II* Listed Buildings or structures 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)	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)	'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	Assets with no significant value or archaeological / historical interest
Uncertain (unknown)	The importance / existence / level of survival of the asset has not been ascertained (or fully ascertained / understood) from available evidence

24.4.4.3 Magnitude

88. Magnitude can be broadly defined as the degree to which heritage significance is positively or negatively changed.
89. Both direct physical impacts and indirect non-physical impacts (e.g. resulting from change in the 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.
90. The finite nature of archaeological remains means that physical impacts are almost always adverse, permanent and irreversible; the 'fabric' of the asset and, hence, its potential to inform our historical understanding, will 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 proposed East Anglia ONE North project and the sensitivity with which the landscape is re-instated subsequent to decommissioning / demolition, if applicable.

91. The indicative criteria used for assessing the magnitude of impact with regard to archaeology and cultural heritage are presented in **Table 24.8**.

Table 24.8 Indicative Criteria for Assessing Magnitude of Impact

Magnitude	Definition
High Adverse	Key elements of the asset's fabric and/or setting are lost or fundamentally altered, such that the asset's heritage 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 heritage significance.
Low Adverse	Elements of the asset's fabric and/or setting which contribute to its heritage significance are affected, resulting in a slight loss of heritage significance.
Negligible	The asset's fabric and/or setting is changed in ways which do not materially affect its heritage 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 heritage significance.

92. It is important that there is a narrative behind the assessment for example as a modifier (qualifier) for the heritage importance assigned to an asset, or the perceived magnitude of impact on the asset, as well as the subsequent anticipated significance of effect (see **section 24.4.4.4**).

93. The magnitude of beneficial impact with respect to archaeology and cultural heritage directly relates to the level of public value associated with an individual impact. Benefits may correspond directly to the proposed East Anglia ONE North 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).
94. 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 through the Suffolk HER as part of the proposed East Anglia ONE North project.

24.4.4.4 Significance of Effect

95. Following the identification of the heritage importance of the asset, and the magnitude of the impact upon heritage significance, it is possible to determine the significance of effect in EIA terms using the matrix presented in **Table 24.9**.
96. The significance of effect is qualitative and reliant on professional experience, interpretation and judgement. The matrix should therefore be viewed as a framework to aid understanding of how a judgement has been reached, rather than as a prescriptive, formulaic tool.

Table 24.9 Significance of Effect Matrix (specific to Archaeology and Cultural Heritage)

		Adverse Magnitude				Beneficial Magnitude			
		High	Medium	Low	Negligible	Negligible	Low	Medium	High
Heritage Importance	High	Major	Major	Moderate	Minor	Minor	Moderate	Major	Major
	Medium	Major	Moderate	Minor	Minor	Minor	Minor	Moderate	Major
	Low	Moderate	Minor	Minor	Negligible	Negligible	Minor	Minor	Moderate
	Negligible	Minor	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Minor

97. **Table 24.10** outlines the significance of effect definitions / categories.

98. Following initial assessment, if the impact does not require additional mitigation (or none is possible) the residual impact will remain the same. If, however, additional mitigation is proposed there will be an assessment of the post-mitigation residual impact.

Table 24.10 Significance of Effect Definitions

Significance of Effect (level)	Definition
Major	Change in heritage 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 heritage significance, both adverse and 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 heritage 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 heritage significance.
No effect	No change to heritage significance.

99. Note that for the purposes of the EIA, ‘major’ and ‘moderate’ adverse impacts are deemed to be significant (in EIA terms), and as such may require mitigation. Whilst minor impacts are not significant in their own right, it is important to distinguish these from other non-significant (negligible) impacts as they may contribute to significant impacts cumulatively or through interactions, for example between heritage assets or elements of the historic environment (or historic landscape).
100. Embedded mitigation (see **Table 24.3**) (for example where potential impacts may be avoided through detailed design, and hence heritage assets are therefore preserved *in situ*, where possible) are referred to and included in the initial assessment of impacts as part of this chapter. If the impact does not require mitigation (or none is possible) the residual impact will remain the same. If, however, additional mitigation is required then there will be an assessment of the post-mitigation residual impact.

24.4.5 Historic Landscape Character

101. The approach to the assessment of HLC differs to that outlined above for heritage assets. 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 the landscape and how all aspects of the landscape, no matter how modern or fragmentary, are treated as part of historic landscape character³. It is not meaningful, therefore, to assign a level of heritage 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 24.7** (where relevant).

102. 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 the proposed East Anglia ONE North project.
103. With regards to HLC, in terms of assessing impact, it is the alteration arising as a result of the proposed East Anglia ONE North project to the baseline HLC as assessed in this chapter (see **section 24.5.4** and **Appendix 24.3**) that is the key focus. In the absence of attributing heritage importance, impact upon HLC cannot be assessed using the significance matrix presented in **Table 24.9**, but is 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, impacts 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.

24.4.6 Cumulative Impact Assessment

104. The proposed East Anglia ONE North project Cumulative Impact Assessment (CIA) will initially consider the cumulative impact with only the proposed East Anglia TWO project against two different construction scenarios (i.e. construction of the two projects simultaneously and sequentially). The worst case scenario (WCS) of each impact is then carried through to the traditional CIA which considers other developments which have been screened into the CIA.
105. For a general introduction to the methodology used for the CIA please refer to **Chapter 5 EIA Methodology**. Cumulative impacts have been assessed based on a desk-top exercise and consultation with local stakeholders to identify

³ <https://historicengland.org.uk/research/methods/characterisation-2/historic-landscape-characterisation/>).

potential projects with which there could be interactions. It is not anticipated that the physical footprint of the proposed East Anglia ONE North project works will overlap with any other existing, consented or proposed projects other than the proposed East Anglia TWO project. As such, it is expected that cumulative impacts to unknown buried archaeology would predominantly be confined to effects of the proposed East Anglia ONE North and East Anglia TWO projects. Nonetheless it is acknowledged that direct physical impact to sub-surface remains at a landscape scale may occur cumulatively as a result of the groundworks of the proposed East Anglia ONE North project and those of other projects within the region.

106. Cumulative impacts upon heritage significance associated with changes in the setting of designated and non-designated heritage assets have been considered. The settings assessment, undertaken as part of the archaeological ADBA (**Appendix 24.3**) in line with Historic England guidance (see **section 24.4.1**) and progressed following the submission of the PEIR in consultation with the HSG, has been developed as part of this chapter (**Appendices 24.7** and **24.8**) using landscape and visual impact assessment tools-kits (e.g. ZTVs and photomontages), particularly in relation to above ground infrastructure.

24.5 Existing Environment

24.5.1 Introduction

107. The following sections provide a summary of the known and potential archaeological and cultural heritage resource within the study areas (as defined in **section 24.3.1** and shown on **Figure 24.1**).
108. The archaeological periods referred to in this chapter are broadly defined by the following date ranges:
- Palaeolithic: 960,000 BP – 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.

24.5.2 Designated Heritage Assets

24.5.2.1 Summary of Designated Heritage Assets within the Study Areas

109. There are 23 designated heritage assets within the ISA (**Figure 24.2 and Appendix 24.5**), comprising three Scheduled Monuments and 20 Grade II Listed Buildings.
110. There are 24 designated heritage assets within the OSA (**Figure 24.2 and Appendix 24.5**), comprising four Grade II* Listed Buildings and 20 Grade II Listed Buildings.

24.5.2.2 Summary of Designated Heritage Assets within the Onshore Development Area

111. There are no designated heritage assets within the onshore development area.

24.5.2.3 Heritage Settings Assessment

112. The onshore construction will avoid any direct physical impacts upon designated heritage assets (e.g. listed buildings / scheduled monuments) because no designated heritage assets are located within the onshore development area. Indirect (non-physical) impacts, associated with changes in setting, will, however, take place. Designated heritage assets have been considered as part of the heritage settings assessment work undertaken, detailed in **Appendices 24.3, 24.7 and 24.8** and incorporated into the impact assessment presented in this ES.
113. As a result of the settings assessments undertaken in consultation with the ETG, eight assets were recommended and taken forward for further assessment within this chapter:
- Little Moor Farm (1215743, Grade II).
 - High House Farm (1216049, Grade II).
 - Friston House (1216066, Grade II).
 - Woodside Farmhouse (1215744, Grade II).
 - Church of St Mary, Friston (1287864, Grade II*).
 - Friston War Memorial (1435814, Grade II).
 - Friston Post Mill (1215741, Grade II*).
 - Aldringham Court (1393143, Grade II).
114. Setting assessment work in relation to the designated heritage assets outlined above is discussed, where relevant, in **section 24.6**, and further detail can be found in **Appendix 24.7**.

24.5.2.4 Heritage Importance

115. Based on the criteria shown in **Table 24.7**, the designated heritage assets outlined in **section 24.5.2.3** and **24.5.2 (Figure 24.2 and Figures 5 and 7 in Appendix 24.3)** are considered to be assets of medium or high heritage importance with perceived regional or national importance.

24.5.3 Non-Designated Heritage Assets

24.5.3.1 Summary of Non-designated Heritage Assets within the Study Areas

116. There are 283 non-designated heritage assets within the study areas (**Figure 24.3, Appendix 24.6 and Appendix 24.3**), comprising 210 previously recorded non-designated assets and 73 previously unrecorded potential non-designated heritage assets. Of the 210 previously recorded heritage assets, 34 are within or partly within the onshore development area, 140 within or partly within the ISA and 34 within or partly within the OSA, with two additional heritage assets extending across both the ISA and OSA.
117. Of the 73 previously unrecorded potential non-designated heritage assets, 46 intersect or are within the onshore development area with a further 15 located within or partly within the ISA and the remaining 12 within or partly within the OSA. The construction of the proposed East Anglia ONE North project has the potential to result in direct physical impacts and indirect non-physical impacts (associated with change in setting) upon non-designated heritage assets.
118. Non-designated heritage assets potentially subject to direct physical impacts are confined to the onshore development area and may comprise potential sub-surface archaeological remains and above ground heritage assets (e.g. earthworks or structures).
119. Non-designated heritage assets which may be subject to indirect non-physical impacts (associated with change in setting) as a result of the proposed East Anglia ONE North project may be either within or beyond the parameters of the onshore development area. Non-designated heritage assets have been considered as part of the heritage settings assessment, summarised in **section 24.5.3.3**, and detailed in **Appendices 24.3 and 24.7** of this ES.

24.5.3.2 Non-designated Heritage Assets Within the Onshore Development Area

120. There are 80 non-designated heritage assets within the onshore development area (see **Appendix 24.6**), comprising 34 heritage assets recorded by the HER and / or NRHE and 46 previously unrecorded potential heritage assets (as indicated by LiDAR, AP and historic mapping data) (**Figure 24.3**).

121. These heritage assets indicate the potential presence of below ground archaeological remains / features and / or the presence (or potential presence thereof), of above ground heritage assets (e.g. earthworks or structures).

24.5.3.2.1 Sub-surface Archaeological Remains

122. Heritage assets within the onshore development area that are considered to potentially represent surviving below ground archaeological remains have not yet been fully evaluated through intrusive (e.g. trial trenching) evaluation approaches.

123. Features indicative of below ground archaeological remains, as indicated by data available and archaeologically assessed as part of the ADBA (see **Appendix 24.3**), variously include cropmarks, soil / parch marks, depressions and ditches. 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.

124. A programme of archaeological geophysical survey (detailed magnetometry) has also been undertaken and further helps inform an understanding of the sub-surface archaeological potential of the onshore development area. A summary of results (**Appendix 24.4**) of the geophysical survey data (where acquired to date) across the onshore development area is provided below.

125. Eleven broad AAAs have been identified across the onshore development area, ranging from extensive areas of settlement and enclosure or single clearly defined features. A summary of the AAAs identified to date is provided in **Table 24.11** below, with further information provided in **Appendix 24.4**.

Table 24.11 Summary of AAAs Identified to date within the Geophysical Survey Area

AAA ID	Summary
AAA1 (Appendix 24.4, ILLUS 88-120)	Numerous conjoining linear anomalies forming a huge, complex, system of land division and enclosure. Includes a likely Bronze Age barrow (outside of the onshore development area). A few of the linear anomalies correspond with boundaries on tithe or estate maps indicating a likely post-medieval origin whilst others clearly intersect with mapped boundaries and on this basis these anomalies have been interpreted as of agricultural origin. The field system in AAA1 is of probable post-medieval origin. This AAA comprises a c. 3km section of the onshore development area, extending northwards from the point at which the cable route makes landfall (approximately 116ha). Note: certain concentrations of known anomalies have been avoided through project design and widening / micrositing of the onshore development area at these locations.
AAA2	A single circular anomaly interpreted as the ploughed down remains of a Bronze Age barrow (within the onshore development area). Two discrete anomalies immediately north of the possible barrow could represent pits or areas of burning associated with the former monument. Some 250m south of the barrow is a

AAA ID	Summary
<p>(Appendix 24.4, ILLUS 121-129)</p>	<p>rectangular enclosure of unknown date. Several discrete anomalies, two with characteristics of a kiln have also been identified in GO-16. In GO-17 (south of GO-16), a rectilinear enclosure with a small square enclosure within it has also been identified, with a number of corresponding linear cropmarks. These cropmarks have been assigned a tentative military interpretation. Note: other known anomalies have been avoided through project design and widening / micrositing of the onshore development area at this location.</p>
<p>AAA3 (Appendix 24.4, ILLUS 130-147)</p>	<p>A large area of archaeological activity (c. 98 ha), with three separate foci of activity having been identified. To the north of AAA3 (GO-21 and GO-22) is a confusing pattern of linear and rectilinear anomalies. Considerable quarrying activity in these two fields makes confident interpretation more difficult but the pattern of enclosure appears dissimilar to that defined within AAA1 being considerably less regular. The date of this system of enclosures is uncertain and could date from the Iron Age to post-medieval periods.</p> <p>In the field immediately south (GO-22) is a small square enclosure appended on the eastern side of a linear anomaly that locates a former field boundary. At least five former fields/enclosures have been identified immediately east, interpreted to be of likely post-medieval origin.</p> <p>Along the southern edge of GO-22 extending south into OT-01 are sinuous parallel curvilinear anomalies (possible trackway) marking the northern boundary of a series of small (undated) enclosures, attesting to archaeological activity in the area. In OT-01 the archaeological activity clearly does continue although with no obvious pattern except for the continuation of the trackway.</p> <p>Note: certain concentrations of the known anomalies have been avoided through project design and widening / micrositing of the onshore development area at these locations.</p>
<p>AAA4 (Appendix 24.4, ILLUS 148-159)</p>	<p>AAA4 is immediately west of Aldeburgh Road and as a large area comprising an extensive system of former field division and settlement which have been split into three main foci of archaeological activity.</p> <p>The first element includes a complex arrangement of linear anomalies indicating a ladder-like series of smaller enclosures aligned north/south across the full width of field BE-07. At the southern end of the field the enclosures are much smaller with numerous internal discrete anomalies suggestive of settlement and/or industrial activity. Quarrying activity in the south-eastern corner of the field has truncated some of the archaeological remains.</p> <p>The second element is a trackway (approximately 250m to the west of the smaller enclosures), clearly defined by two parallel ditches (aligned north/south). A fragmentary ditch type anomaly aligned east/west, extending east from the trackway, strongly suggests that the land between the trackway and the settlement described above was divided into large fields as is the land to the west of the trackway. A small circular anomaly/enclosure has also been identified, which may have been appended to the former boundary or may represent a ploughed-out barrow feature.</p> <p>The third element comprises a more complete pattern of former field division in fields BE-03 and BE-05. At the north of BE-03, the enclosures become much smaller with numerous discrete anomalies including one small circular anomaly with a possible entrance to the western side.</p> <p>Note: certain concentrations of the known anomalies have been avoided through project design and widening / micrositing of the onshore development area at these locations.</p>

AAA ID	Summary
AAA5 (Appendix 24.4, ILLUS 169-171)	AAA5 includes a roadside enclosure approximately 70m in length along the western edge of field BE-04. Several discrete anomalies, which are interpreted as of possible or probable archaeological origin, are identified within this enclosure. To the east of the enclosure several linear ditch type anomalies, on broadly the same south-west/north-east alignment, indicate a wider field system in the surrounding area.
AAA6 (Appendix 24.4, ILLUS 160-168)	The partial remains of a probable barrow are identified on the boundary between RM-10 and RM-11. A small cluster of sub-rectangular enclosures in the centre of field RM-13 may potentially be dated to the Middle Bronze Age through to the early Roman period although the partial remains of the barrow, less than 100m to the north-east, could suggest a prehistoric date for the enclosures to be more likely. Linear anomalies suggest the partial remains of larger enclosures to the north and east in RM-10, RM-11 and RM-12. Another small isolated rectilinear enclosure is identified on the northern limit of the survey area in RM-10.
AAA7 (Appendix 24.4, ILLUS 160-168)	A circular anomaly with a cross-shaped anomaly central within it in field RM-04 locates a post-medieval windmill recorded on historic mapping.
AAA8 (Appendix 24.4, ILLUS 181-183)	Three of four conjoining rectangular enclosures aligned north/south on the southern boundary of RM-09 (outside of the onshore development area). The enclosures do not continue into RM-14, although other discontinuous linear anomalies are identified throughout this field hinting at the presence of larger fields to the south. The date of these features is uncertain but again could be from the Iron Age to post-medieval.
AAA9 (Appendix 24.4, ILLUS 175-180 and 184-192)	A large area of archaeological activity (c. 45 ha) extending across several fields (BA-01, WR-01, WR-02, WR-03, WR-05, WR-06, WR-07, WR-08 and RM-08) including a cluster of conjoining enclosures (RM-08) which extends for c. 255m on a north-east/south-west alignment (bordering the south-western section of Grove Wood). The numerous discrete anomalies are indicative of occupation, possibly representing a roadside settlement of likely medieval date. Throughout the remainder of AAA9 discontinuous linear anomalies are indicative of a former system of field division of uncertain date.
AAA10 (Appendix 24.4, ILLUS 172-174)	A small cluster of recti-linear enclosures (approximately 70m x 70m) in field RM-01, possibly dating from the later prehistoric through to the early post-Roman periods. Some of the responses are very low magnitude suggesting that the archaeological activity may be more extensive than currently revealed by the magnetic survey. Although within the onshore development area. The known extent of this anomaly is anticipated to be largely or wholly unaffected.
AAA11 (Appendix 24.4, ILLUS 193-195)	AAA111 is an area located at the extreme western end of the onshore development area in BH-09. Two foci of activity are identified. The smaller area is located immediately south of the twin pylons and the magnetic response from the pylons is clearly masking the full extent of the archaeology. Anomalies locating two small enclosures aligned north/south are identified as well as several large discrete anomalies which are interpreted as of possible archaeological origin.

AAA ID	Summary
	The second area is far more extensive and comprises an L-shaped arrangement of enclosures which extends 150m south from the corner of New Covert to the southern boundary of BH-09 and then extending 225m east into BH-10. Several large discrete anomalies are almost certainly archaeological in origin.

126. The programme of geophysical survey revealed that the fields where the onshore substation and National Grid substation will be sited have the least apparent archaeological interest within the areas surveyed to date with virtually no anomalies of possible archaeological origin and none of probable archaeological origin being identified. Although it is accepted that no geophysical survey will identify all archaeological features, it can be stated with a reasonable degree of confidence that it is unlikely there will be significant or extensive sub-surface archaeological remains within these fields on the basis that archaeological activity was clearly identified (AAA10 and AAA11) on the same geology and soils as that which prevail within the footprint of the substations.
127. In addition to those previously unrecorded AAAs outlined above, geophysical survey was also undertaken on the two possible locations of the site of the former parish church of Buxlow/Buxton (KND 009 / HA 6). No anomalies of clear or obvious archaeological potential were identified on the HER site (KND 009), although there is a distinct area of disturbed readings in the centre of the field. Although this may represent a spread of material resulting from the destruction of a building, it could equally be accounted for due to variation in the superficial deposits and soils. Part of the field in which KND 009 is outside the onshore development area and therefore part of KND 009 is currently unevaluated. The rectilinear cropmark identified as HA 6 was also surveyed, with results corresponding with an area of very variable magnetic responses, thought likely to be of geological origin at this stage of enquiry.
128. Those archaeological sites / features / assets / anomalies (based on the data presented in the ADBA and the archaeological assessment of geophysical survey data) considered to be potentially vulnerable to direct physical impact as a result of the proposed East Anglia ONE North project (i.e. those within the onshore development area) are directly addressed within the impact assessment and discussed, where relevant, in **section 24.6**.

24.5.3.2.1.1 Archaeological Potential of the Onshore Development Area

129. The overall archaeological potential of the onshore development area, as assessed and reported on in the ADBA (**Appendix 24.3**) prior to the archaeological assessment of geophysical survey data, is considered to be medium (**Appendix 24.3, section 3.7**), with the following key distinctions drawn out based on information available to date:

- Moderate to high likelihood of further prehistoric remains, including the possibility of assemblages of flint artefacts – especially within the gravel terraces of the Hundred River;
 - Moderate likelihood of further late prehistoric (Iron Age) and Romano-British remains in the form of possible settlements and associated field systems; and
 - High likelihood of evidence of medieval agricultural land use.
130. The earlier prehistoric remains are likely only to be discovered during intrusive archaeological investigation and could be of up to national importance. The later prehistoric and Roman sites are likely to be readily identified through geophysical survey and would most likely be of local to potentially regional importance. Note that the geophysical survey undertaken to date has already provided enhanced information on this. Medieval features are also likely to be readily identified through geophysical survey, with remains unlikely to be of more than local importance (the geophysical survey undertaken to date has provided enhanced information on this).
131. The ADBA highlights a high or very high potential for burials within the area around the possible church of Buxlow (KND 009 / HA6).
132. The archaeological potential of the onshore development area is based on an assessment of data obtained through a comprehensive assessment of baseline data gathering and survey campaigns to inform the assessment. Post consent investigations (see sections **24.4.2** and **24.3.3**) will feed into the establishment of appropriate, proportionate and robust mitigation approaches.

24.5.3.2.2 Above Ground Archaeological Remains and Heritage Assets

133. Features considered to represent above ground heritage assets within the onshore development area are summarised **Table 24.12**.

Table 24.12 Possible above Ground Heritage Assets within the Onshore Development Area (Figures 24.3 a-j)

Source / ID	Definition
HER ADB 226	Aldeburgh / Leiston branch railway line. Old railway line. Now forms a trackway from this location northwards. Southwards the disused line is covered with fern growth and scrubland. A bank associated with the railway line is extant on the east side. Railway house and the extant line are located outside of the survey area.
HER ARG 031	Second World War (WWII) Strongpoint and Diver Battery. Diver battery / Pill Box extant in scrubland. Overgrown with abundant vegetation. Roof intact. Associated earthworks not visible.
HER ARG 032	WWII Two Strongpoints. Not visible upon land. Area obscured by woodland and dense scrub overgrowth. Possibly visible from beachfront as decayed metal eroding from cliff face and concrete collapsed onto beachfront.

Source / ID	Definition
HER ARG 033	WWII Chain home. Not visible. Large area obscured by gorse and scrub overgrowth. Parts also inaccessible / fenced off due to cliff erosion and private land. Ceramic building material and concrete rubble eroding from top of cliff face is visible on the beach front. This may be associated with ARG 033 or ARG 034.
HER ARG 034	WWII Strong point and Diver battery. NRHE records that the building is still extant (NRHE 1478525). Area obscured by woodland, dense scrub and long grass overgrowth. Ceramic building material and concrete rubble eroding from top of cliff face is visible on the beach front. This may be associated with ARG 033 or ARG 034.
HER ARG 052	WWII coastal defences. Eroded re-enforced concrete lumps located on beach. Visible sizes of 0.40x0.30m, 0.40x1.05 and 1.20x0.50m. Heavily decayed and partially covered by beach stone.
HER ARG 070	Earthworks of World War Two anti-glider ditches are visible on aerial photographs on land to the north of Thorpeness Golf Course, Aldringham cum Thorpe.
HER LCS 203	WWII training area and / or strong point. Recent photographs indicate that while much of the site was dismantled before the end of the war, some earthworks probably still survive. Features within this area are obscured by the overgrowth.
HER LCS 213	WWII Diver battery. The site was dismantled at the end of the war but parts of the trackways still survive, as may some of the hardstanding. Features within this area are obscured by the overgrowth.
HER LCS 216	Linear and rectilinear earthworks of unknown date. Linear and rectilinear boundaries of unknown date are visible as earthworks on aerial photographs of The Walks, Aldringham Common. Features within this area are obscured by the overgrowth.
HER FRS 013	Friston Moor, a former common.

134. The heritage assets summarised in **Table 24.12** (and illustrated in **Figure 24.3**) represent only those within the onshore development area considered to represent above ground remains as indicated by descriptive information held by the NRHE / HER and assessed as a result of the walkover survey, aerial photographic, LiDAR and historic map study. Access restrictions, thick vegetation (gorse and scrub) and unharvested crops variously prevented access to some areas during the walkover survey. As such, the potential for heritage assets to survive as above ground remains in addition to those summarised in **Table 24.12** cannot be discounted.
135. In addition to those heritage assets summarised above, the onshore development area includes six parish boundaries (PB1-6), five of which survive as visible features in the landscape (as trackways – PB1 and PB5 – or roads flanked by hedges – PB2 and PB3. The river that defines PB4 still follows the course of the boundary). Parish boundaries are discussed in greater detail in **section 24.5.4**.

24.5.3.3 Heritage Settings Assessment

136. Indirect non-physical impacts upon the significance of non-designated heritage assets, as a result of change in their setting, have been considered. A high-level methodology of the settings assessment approach is outlined in **section 24.4.3** with further detail provided in **Appendices 24.3** and **24.7**.
137. As part of the settings assessment, no non-designated heritage assets were considered to have potential to experience harm in isolation as a result of the proposed East Anglia ONE North project. It is, however, noted that non-designated assets in the vicinity of Fristonmoor are elements in the setting of High House Farm (1216049, Grade II) and Little Moor Farm (1215743, Grade II) and make a positive contribution to their significance. On this basis, the following non-designated heritage assets have been considered as part of the assessment of these two Listed Buildings (see **Figures 24.2** and **24.3**):
- KND 011 - Rectangular moated site of former Buxlow parsonage on the south edge of the former Friston Moor (common);
 - FRS 013 - Friston Moor, a former common;
 - KND 014 - Small mapped enclosure with a scatter of Medieval pottery (20 sherds); and
 - KND 015 - An enclosed area formerly (on C19 maps) containing four dwellings, now demolished.

24.5.3.4 Heritage Importance

138. The former site of a church or chapel north of Friston recorded in the HER (KND 009) as the church for the former parish of Buxlow / Buxton (later subsumed into the neighbouring parish), which may also be represented by the rectilinear cropmark visible on aerial photography (HA6) has been assigned a medium heritage importance (in line with criteria outlined in **Table 24.7**). This is based on its local, and possible regional importance, on the basis that it has the potential to contain evidence that may contribute to regional research aims relating to medieval and early post-medieval land use, and of religious and funerary practice.
139. The remaining non-designated heritage assets within the onshore development area (identified to date as part of this assessment) are examples of locally common features representing post-medieval agriculture and industry, 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. 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 24.6**, as necessary. This precautionary approach represents good practice in archaeological impact assessment and reduces the potential for impacts to be under-estimated.

140. The previously unrecorded non-designated heritage assets, identified as a result of the desktop study of aerial photography, LiDAR imagery and historic mapping within the ADBA (**Appendix 24.3**) are largely represented by cropmark features and / or LiDAR images. 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 24.6**.
141. The AAAs identified as part of the archaeological assessment of geophysical survey data report have been assigned an archaeological importance, summarised in **Table 24.13** (see **Appendix 24.4** for further explanation).

Table 24.13 Summary of AAAs archaeological importance

AAA ID	Element of AAA	Archaeological importance (as a WCS)
AAA1	Former field system of probable post-medieval origin	Low to Medium
	Ploughed down remains of likely Bronze Age barrow	Medium
AAA2	Ploughed down remains of a Bronze Age barrow	Medium
	Rectangular enclosure and possible kilns of unknown date	Medium
	Possible rectilinear enclosure or unknown origin	Medium
AAA3	System of enclosures of uncertain date (could date from the Iron Age to post-medieval periods)	Low to High
	Former fields/enclosures of likely post-medieval date	Low to Medium
	Possible trackway and series of enclosures	Low to High
AAA4	Ladder-like series of enclosures	Medium to High
	Trackway, system of land division and small circular feature (possible ploughed-out barrow feature)	Medium to High
	Former field division (wider field system)	Low to Medium
	Former field division (northern edge) with smaller numerous enclosures	Medium to High

AAA ID	Element of AAA	Archaeological importance (as a WCS)
AAA5	Roadside enclosure	Medium
AAA6	Partial remains of probable barrow	Medium
	Cluster of sub-rectangular enclosures possibly dated to Middle Bronze Age through to the early Roman period (although prehistoric date is likely)	Medium
AAA7	Post-medieval windmill	Medium
AAA8	Enclosures of uncertain date (could date from Iron Age to post-medieval)	Medium
AAA9	Possible roadside settlement of medieval date bordering Grove Wood	Medium
	Former system of field division of uncertain date	Low
AAA10	Cluster of enclosures possibly dating from later prehistoric to early post-Roman periods	Medium
AAA11	Two small enclosures and large discrete anomalies	Medium
	L-shaped arrangement of enclosures	Medium to High

142. The heritage importance of any number of the non-designated heritage assets (previously recorded or otherwise) outlined above may, however, be amended or revised should more information come to light during the post- post-consent stages of the proposed East Anglia ONE North project.
143. Any hedgerows identified as being associated with any of the six parish boundaries within the onshore development area would likely be classed as “Important Hedgerows” under the Hedgerow Regulations (1997). They are therefore identified as heritage assets of medium heritage importance.
144. On the basis of their potential to comprise *in situ* archaeological remains of prehistoric date and / or palaeoenvironmental material associated with specific palaeolandscape features, palaeoenvironmental and geoarchaeological remains may be regarded as having a potentially high heritage importance as a WCS (following the precautionary approach). Isolated discoveries of prehistoric archaeological material discovered within secondary contexts would likely be regarded of low or medium heritage importance.

24.5.4 Historic Landscape Character and Historic Parish Boundaries

145. The HLC of the onshore development area (**Figure 9** in **Appendix 24.3**) is mapped as predominantly comprising 18th century and later enclosure from former common arable or heathland. The area surrounding Knodishall does, however, show the survival of earlier enclosure patterns, formed by random fields

and ancient woodland. This pattern of HLC is interrupted to the south-east and west of Manor Farm, where the post-1950s agricultural landscape has effectively erased earlier historic landscape features and resulted in boundary loss. The area south of Halfway Cottages (to the east of Leiston) is characterised as an area of common pasture surviving in the present day, which formerly comprised common pasture and open margins and 18th century enclosures. A small area flanking the Hundred River (close to Aldringham Court) is characterised as comprising a small area of managed wetland meadow. The eastern extent of the onshore development area consists of a strip of intertidal land, as well as a small area of unimproved land (heath or rough pasture) inland of this to the north of Thorpeness and adjacent to a remnant of common land.

146. The onshore development area crosses six historic parish boundaries (**Figure 24.3**). Any hedgerows associated with, or representing, these boundaries would likely be classed as “Important Hedgerows” under the Hedgerow Regulations. They are therefore identified as heritage assets of medium importance.

Table 24-14 Historic Parish Boundaries within the Onshore Development Area

ID	Description	Route / Location within the onshore development area	Heritage Importance
PB1	Eastern edge of Friston and western edge of Knodishall	North/south between Clouting’s Farm, then Little Moor Farm and Friston village.	Medium
PB2	Western edge of Friston and eastern edge of Knodishall	Southwest from Knodishall Common, along Snape Road to Drane’s Lane Cottages.	Medium
PB3	Friston and Hazelwood boundary	North from Billeaford Hall, along Sloe Lane to junction with Snape Road.	Medium
PB4	Hazelwood and Aldringham with Thorpe boundary	Follows the course of the Hundred River northeast of Gipsy Lane, runs north to cross the B1122 north of Aldringham Court.	Medium
PB5	Aldringham with Thorpe and Leiston (western)	Runs east/west between the dismantled railway track and Aldeburgh Road, across The Walks just south of Forty Acre Belt.	Medium
PB6	Aldringham with Thorpe and Leiston (eastern)	Runs east/west across a field between Square Covert and Dower House.	Medium

24.5.5 Anticipated Trends in Baseline Conditions

147. The existing environment for archaeology and cultural heritage has been shaped by a combination of factors, predominantly consisting of previous land use and onshore development activity.
148. Land use in the onshore development area is variable, and consists of a mixture of arable and market garden agricultural with areas of heath / scrub and woodland and sand dunes along to coastal ridge. Due to the largely rural landscape of the onshore development area, previous impacts to sub-surface archaeological remains from former and current land use are likely to have stemmed, to a large extent, from farming activities such as ploughing. The walkover survey, which targeted a selection of heritage assets visible on aerial photographs, makes reference to a number of features thought to have been dismantled, removed or 'ploughed out' (e.g. former WWII military structures / areas, former field boundaries – see Annex 8 within **Appendix 24.3**). The trend of agricultural activities occurring across the onshore development area is likely to continue, thereby potentially resulting in the gradual degradation and / or disturbance of sub-surface archaeological remains. Although certain levels of direct physical impacts upon buried archaeological remains are considered likely to have largely already occurred due to the longevity of farming activities within the area, it is possible that ongoing impacts are occurring (depending on the depths of modern farming practices), resulting in new and further loss and / or disturbance, particularly where deep ploughing activity is employed.
149. The baseline environment has also been shaped by modern development, particularly in the areas surrounding Leiston, Aldringham, Coldfair Green, Thorpeness and Sizewell, with the historic environment having been vulnerable to the impacts of development in both a physical (direct) and non-physical (indirect - e.g. relating to change in the setting of heritage assets) manner. The historic environment is regarded as continuing to be vulnerable to effects of a physical and non-physical nature arising as a result of future developments. However, due to UK policy, which recognises that heritage assets are an irreplaceable resource, it is anticipated that future development plans will include provision for the application of proportionate mitigation approaches to avoid, reduce or offset impact considered to result in harm.
150. Although the development of modern infrastructure will likely result in some large-scale changes to buried archaeological remains, the information acquired from any archaeological site or feature subject to direct impact will be retained and made publicly available following proportionate mitigation approaches, recorded in the HER and considered as part of the baseline resource. Development also presents opportunities to develop and further enhance the archaeological record.

151. There is a requirement in policy to take into account the desirability of sustaining and enhancing the significance of heritage assets and their setting. Whilst the historic character and setting of heritage assets may be subject to change as a result of future developments, the degree of change will be assessed as part of a weighted approach to decision making, in order for sustainable development to take place and for heritage assets to be safe-guarded in a manner that is both proportionate and appropriate to the significance of known assets.
152. The historic environment is also vulnerable to the effects of climate change⁴. 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 designed 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.
153. Elements of climate change considered to be a particular relevance to the onshore development area include those associated with sea level changes, erosion and the effects of storm waves, which have the potential to damage and de-stabilise coastal heritage assets. Evidence of cliff erosion was noted at the eastern extent of the onshore development area during the walkover survey, with fragments of concrete and metal relating to WWII observed on the beach and within the cliff section (see **Appendix 24.3**). The landfall location is proposed within a dynamic stretch of coastline, with coastal erosion and shoreline retreat, including collapsing cliffs, representing a significant concern in the region. Thorpeness is widely recognised as being prone to slow coastal erosion and historically, the frontage has experienced erosion rates of between 0.1 to 0.4m / year (Royal Haskoning 2010a, b). Although periods of erosion occurring to date

⁴ <https://historicengland.org.uk/research/current/threats/heritage-climate-change-environment/what-effects/>

within the area have been episodic, interspersed with long quiescent periods (Mott MacDonald 2014), the anticipated continuation of historical trends indicate that erosive conditions are likely to be ongoing, resulting in the erosion and exposure of heritage assets currently present within and along this stretch of the coastline. 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.

154. The baseline conditions for archaeology and cultural heritage (particularly with respect to non-designated sub-surface remains) are therefore considered to be subject to a gradual decline on the basis of ongoing land use and development within the onshore development area and surrounding area, although the degree to which any change is likely to occur is difficult to predict based on information available to date. The sensitivity of archaeology and cultural heritage as a non-renewable resource has been considered within this chapter and informs the embedded and ongoing mitigation strategy to be further developed and adopted by the proposed East Anglia ONE North project post-consent so that impacts can be avoided, reduced or offset, as and where appropriate.

24.6 Potential Impacts

155. This section outlines potential impacts as a result of the proposed East Anglia ONE North project, 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 24.4** and **Chapter 5 EIA Methodology**.
156. A range of potential impacts may occur to archaeology and cultural heritage assets as a result of changes during the construction, operation and decommissioning of the proposed East Anglia ONE North project. The proposed East Anglia ONE North project has the potential to impact upon the historic environment resource in a number of ways, through both direct (physical) changes and indirect (non-physical) changes to the setting of heritage assets. Some impacts and changes will be temporary and others permanent, some confined to the construction stages and others more permanent during operation and the lifespan of the proposed East Anglia ONE North project, and subsequent decommissioning. A summary of all potential impacts identified for archaeology and cultural heritage is provided in **section 24.10, Table 24.26**.
157. Direct (physical) impacts, as stated in the NPS EN-3 (DECC 2011b: 49), encompass direct effects from the physical siting of the proposed East Anglia ONE North project. 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 the proposed East Anglia ONE North project which involve intrusive groundworks have the potential to affect heritage assets with archaeological interest (e.g. buried archaeological remains) through direct physical change.

158. Indirect (non-physical) impacts on the historic environment, as stated in NPS EN-3 (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 the proposed East Anglia ONE North project, 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 the proposed East Anglia ONE North project during the operational phase, the 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 will be, by comparison, shorter in duration and of a temporary nature, and as such it is considered that only changes in setting due to the operation of the proposed East Anglia ONE North project would be of sufficient duration to merit detailed assessment, see **Appendix 24.7**.
159. The impact assessment as presented in this chapter assumes that activities associated with construction may theoretically occur anywhere within the onshore development area.

24.6.1 Potential Impacts during Construction

160. Any excavations relating to site groundworks associated with the onshore substation, National Grid infrastructure, onshore cable corridor and landfall may damage and / or remove buried archaeological and / or palaeoenvironmental deposits, where present.
161. In addition, the temporary presence of the construction works themselves could affect the setting of heritage assets, and their associated heritage significance, both designated and non-designated and elements of the historic landscape.

24.6.1.1 Impact 1: Direct Physical Impact on (Permanent Change to) Buried Archaeological Remains

162. Impacts resulting in potential effects as part of the construction work are those associated with intrusive groundworks, including:
- The removal of topsoil anywhere across the onshore development area;

- The excavation of transition pits at the landfall;
 - The application of HDD at the landfall;
 - Open cut trenching as part of the onshore cable installation works;
 - The excavation of jointing bays and link boxes along the onshore cable route;
 - Groundworks associated with the onshore cable route easement, CCSs, and associated access trackways; and
 - Groundworks associated with onshore infrastructure (e.g. onshore substation, National Grid substation and National Grid overhead line realignment).
163. Any adverse impacts (and associated effects) upon sub-surface archaeological remains due to construction-related works would likely be permanent and irreversible in nature. Once archaeological deposits and material, 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.
164. On this basis, direct physical impacts on the significance of buried archaeological remains 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.
165. A staged programme of assessment has been undertaken 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 development area. This has included the compilation of the ADBA (**Appendix 24.3**), which includes and is informed by:
- A review of various records, data and information sources;
 - An aerial photographic and LiDAR data assessment;

- The initial heritage settings assessment work;
 - A field reconnaissance survey; and
 - The assessment of historic map resources.
166. A programme of archaeological geophysical survey (detailed magnetometry) has also been undertaken and ultimately informs upon an understanding of the sub-surface archaeological potential within the onshore development area. The results of this survey (**Appendix 24.4**) have been used to develop the baseline account of the onshore development area. Therefore, many anomalies (potential and likely sites or features) of archaeological interest that may be vulnerable to the proposed works have been identified, allowing for appropriate and proportionate next steps to evaluation and subsequent mitigation strategies to be developed to help avoid, reduce or off-set any impacts identified (or those which have the potential to occur).

24.6.1.1.1 Impacts Prior To Mitigation

24.6.1.1.1.1 Landfall Location

167. Construction activities within the landfall location that have the potential to directly (physically) impact buried archaeological remains are those associated with HDD works, cable trenching, landfall CCS and groundworks associated with transition bay installation (up to four drills including two transition bays for the proposed East Anglia ONE North project).
168. Data available and assessed to date (as part of this assessment) within the landfall location indicates a predominance of features associated with the coastal defence network of the two World Wars (particularly those of the WWII) (ARG 031, ARG 032, ARG 033, ARG 034, ARG 052, LCS 119 and NRHE 1478701). It is possible that sub-surface remains relating to these features exist within the landfall location. A number of LiDAR features (e.g. hollows / depressions visible on the LiDAR data) have also been identified within the landfall location (HA60, HA62, HA63, HA64 and HA67, illustrated in **Figure 24.3**), a number of which are considered to represent either bomb craters of WWII date or perhaps more predominant are historic extraction pits. A review of historic cartographic sources has also revealed a feature thought to represent a by-product of modern agricultural practice (possible field drain HA61, illustrated in **Figure 24.3**). Sub-surface archaeological remains may also exist in the landfall location in association with HA66 and HA68, the recorded location of former structures as indicated by aerial photographic and historic mapping data (**Figure 24.3**). Below ground features associated with the two World Wars and those relating to former structures are likely to be of low heritage importance. Features thought to represent by-products of modern agricultural practice are considered to be of negligible-low heritage importance.

169. The review of cartographic sources, undertaken as part of the ADBA, also revealed a number of circular or semi-circular features in the area north of Thorpeness, not previously recorded (e.g. HA69) (**Figure 24.3**). Given the quantity of known extraction sites in the area, it is expected that many of these are also likely to be historic extraction pits. However, with monuments such as round barrows known in the wider area, the potential for these features to represent prehistoric funerary remains should not be completely discounted. Features of this nature would likely be considered of low to medium heritage importance.
170. The landfall location also intersects AAA1, identified in the geophysical survey data acquired across the onshore development area and interpreted as a former field system likely to mostly be of post-medieval origin and the ploughed down remains of a likely Bronze Age barrow. The elements of this AAA which interact with the onshore development area (former field system) have been assigned a low-medium heritage importance.
171. Without further investigation, sub-surface archaeological remains within the landfall location should be regarded as including heritage assets with a potentially medium heritage importance (as the highest likely level of importance – this is a precautionary approach taken to determine a potential WCS for assessment in line with the assessment methodology; see **section 24.5.3.2**). It could be possible that direct physical impacts to potential below ground archaeological remains as part of construction works at the landfall could result in a medium adverse magnitude of impact, thereby resulting in a **moderate adverse** significance of effect in certain instances (prior to site specific / additional mitigation), based upon a WCS. This is due to assets AAA1 and HA69 being of low-medium heritage importance, resulting in a significance of effect of minor to moderate adverse. All other assets are of negligible to low heritage importance, resulting in a significance of effect of negligible to minor.

24.6.1.1.1.2 Onshore Cable Corridor

172. Construction activities in the onshore cable corridor that have the potential to directly (physically) impact buried archaeological remains are those associated with cable trenching, potential trenchless techniques at crossing points and groundworks associated with compound footprints, jointing bay and link box installation and the cable easement.
173. Data available and assessed to date within the onshore cable corridor indicates the potential presence of sub-surface archaeological remains of varying type. Features relating to defence measures and training facilities associated with the two World Wars are well represented (e.g. ARG 017, ARG 028, ARG 031, LCS 063, LCS 113, 202, 203, LCS 206, LCS 213, NRHE 1478561 and NRHE

1478677) (**Figure 24.3**), with the potential for sub-surface remains (foundations) to exist within the onshore cable corridor. Quarry pits (e.g. LCS 117 and HA58) and undated cropmark features (possible former field boundaries and undated enclosures e.g. LCS 210 and LCS 214) are also recorded variously across the onshore cable corridor, as are hollows / depressions and former field boundaries, enclosures and trackways evident on the LiDAR and AP data (HA8, HA16, HA22, HA25-7, HA33, HA42, HA46, HA51, HA53, HA59 and HA60) (**Figure 24.3**). Below ground features associated with the former post-medieval bridge crossing the Hundred River (ARG 016) or the four former dwellings of post-medieval date at Littlemoor Farm, now demolished (KND 015) may also be present. Based on information available to date, the features outlined above are considered likely to be of no greater than low heritage importance.

174. Notable features within the onshore cable corridor (see **Figure 24.3**) include cropmarks evident in the fields to the northeast of Church Farm, Knodishall (HA6). HA6 is thought to possibly represent the remains of the chapel site recorded in the HER as 'KND 009'. KND 009 is approximately 100m to the west of HA6. However, as the mapped location of the chapel as recorded by the HER is derived from a 1753 map, the location is not considered to be exact or certain. The rectilinear cropmark identified as HA6 was covered by geophysical survey, the results of which correspond with an area of very variable magnetic responses, thought likely to be of geological origin at this stage of enquiry. However, KND009 / HA6 is considered to be of potential medium heritage importance.
175. A number of semi-circular or circular features have also been identified within the onshore cable corridor (KND 007 and LCS 215) (**Figure 24.3**). Should these features represent prehistoric funerary monument remains, they would likely be considered of medium heritage importance (as the highest likely level of importance – this is a precautionary approach taken to determine a potential WCS for assessment in line with the assessment methodology; see **section 24.4.4.2**), although alternative interpretations regarding the origin of these features are described within the records held by the HER e.g. LCS 215 has been identified as the possible site of a medieval to post-medieval mill. On this basis they have been assigned a low – medium heritage importance. A number of circular / sub-circular features and possible pits of unknown origin were also identified during the LiDAR / AP assessment within the onshore cable corridor e.g. HA9, HA15, HA31, HA32, HA36, HA49 and HA55 (**Figure 24.3**). Should any of these features be identified as representing prehistoric funerary monuments, they too would likely be considered of ranging between low and medium heritage importance (as the highest likely level of importance – this is a precautionary approach taken to determine a potential WCS for assessment; see **section 24.4.4.2**).

176. Other features identified within the onshore cable corridor during the LiDAR / AP assessment include HA 48 (possible group of small circular features maybe related to agricultural activity), considered to be of negligible-low heritage importance and a further six unidentified features that were either inaccessible or not evident during the walkover survey (HA 34, 35, 37, 39, 41 and 47). The nature of these features are unknown. Based on information available to date, these features are assigned a low heritage importance until further data regarding their origin is acquired.
177. There is only a very slight interaction between the onshore cable corridor and ARG 057 (historic settlement core of Aldringham, considered to be of low - medium heritage importance) and KND 015 (former dwellings of post-medieval date at Littlemoor Farm, now demolished, considered to be of low heritage importance). The magnitude of effect upon these assets is considered to be negligible to minor / negligible (respectively).
178. The onshore cable corridor also intersects AAA1-9, identified in geophysical survey data acquired across the onshore development area, assigned variously an archaeological importance ranging between low to high, depending on the features identified (see **Table 24.16**). Those elements of these AAAs which interact with the onshore development area are shown in **Table 24.16** (see **section 24.6.1.1.3**)
179. Without further investigation, sub-surface archaeological remains within the onshore cable corridor should be regarded as including heritage assets with a potentially medium to high heritage importance (as the highest likely level of importance, see **section 24.3.3** – this is a precautionary approach taken to determine a potential WCS for assessment; see **section 24.4.4.2**). As detailed design parameters which will be finalised post-consent (onshore cable route and associated works – see **Chapter 6 Project Description**), it could be possible that direct physical impacts to potential below ground archaeological remains as part of construction works within the onshore cable corridor could result in a high adverse magnitude of impact, thereby resulting in a **major adverse** significance of effect (in certain instances and prior to site specific / additional mitigation), based upon a WCS

24.6.1.1.1.3 National Grid Substation and Onshore Substation

180. Construction activities relating to the National Grid substation and onshore substation that have the potential to directly (physically) impact buried archaeological remains are those associated with groundworks and landscape planting relating to substation construction, pylon relocation, cable sealing end compounds, gantries and associated temporary working areas.

181. Based on data available to date, notable areas, sites, features and anomalies where sub-surface archaeological remains may be present (represented or indicated) within the onshore substation location and associated areas include the former site of a chapel, depicted as a '*church or chapel in ruins*' on Bowen's 1753 map of Suffolk at 'Buxton', north of Friston church (KND 009), which may be considered of medium heritage importance (see **Figure 24.4**). The true location of the former chapel may in fact be represented by HA6 (identified within the onshore cable corridor area as part of the LiDAR / AP assessment), some 100m east of the recorded location of the chapel by the HER. KND 009 was covered as part of the geophysical survey programme. No anomalies of clear or obvious archaeological potential were identified on the KND 009 site, although there is a distinct area of disturbed readings in the centre of the field. Although this may represent a spread of material resulting from the destruction of a building, it could equally be accounted for due to variation in the superficial deposits and soils.
182. Additional previously recorded non-designated assets within the onshore substation location that may be representative of sub-surface remains include the rectangular moated site of the former Buxlow parsonage (KND 011, assigned a medium heritage importance) and the possible former remains of a post-medieval brickwork (KND 016 – of likely low heritage importance). Other potential assets within the onshore substation location include features evident on LiDAR and AP data in the form of hollows / depressions (HA1, HA2, HA5, HA13 and HA14), linear / curvilinear features and a former field boundaries (HA3) and the location of former buildings (HA4, HA72) (see **Figure 24.3**). These features are likely to be of low heritage importance.
183. The programme of geophysical survey revealed that the fields where the onshore substation and National Grid substation will be sited have the least apparent archaeological interest within the areas surveyed to date with virtually no anomalies of possible archaeological origin and none of probable archaeological origin being identified. Nonetheless, the outer footprint of the National Grid substation and onshore substation area does intersect AAA9, identified in geophysical survey data acquired across the onshore development area. AAA9 is identified as a large area of archaeological activity, the main focus of which is away from the substation locations, east of Grove Road but potentially extending west of Grove Road into the field systems south of the onshore substations, and interpreted as a possible roadside settlement of likely medieval date. This area has been assigned a medium heritage importance. There is, however, potential for interaction between the former systems of field division of uncertain date (assigned a low archaeological importance) and wider onshore substation and / or National Grid substation-related works that are also related to the possible roadside settlement of likely medieval date. AAA10 and AAA11 intersect the

overhead line area, with a possible potential for a pathway between the impact and receptor. However, given the nature of works in the overhead line modification areas, the known extent of these anomalies are anticipated to be largely or wholly avoided.

184. Without further investigation, sub-surface archaeological remains within the onshore substation and National Grid substation should be regarded as including heritage assets with a potentially medium-high heritage importance (as the highest likely level of importance – this is a precautionary approach taken to determine a potential WCS for assessment in line with the assessment methodology; see **section 24.4.4.2**). Until confirmation of final detailed design post-consent, it could be possible that direct physical impacts to potential below ground archaeological remains as part of construction works within the onshore substation and National Grid substation locations could result in a high adverse magnitude of impact, thereby resulting in a **moderate adverse** significance of effect in certain instances (prior to site specific / additional mitigation), based upon a WCS All other assets are of negligible to low heritage importance, resulting in a significance of effect of negligible to minor.

24.6.1.1.2 Additional Mitigation Measures

185. Avoidance, micro-siting and route refinement are embedded into the design of the proposed East Anglia ONE North project, where possible (see **section 24.3.3**). This strategy ensures that, when and where available, geophysical survey data has been input directly into the iterative design process so that potential sub-surface archaeological remains (in particular suspected features of likely medium or high heritage importance or concentrated areas of known complex archaeological features) have been avoided, wherever possible within the confines of engineering and other environmental constraints.
186. On the basis of the potential for human remains to exist in association with the former chapel at 'Buxton' (KND 009 and HA6), these sites (i.e. the original recorded location for KND 009 and the cropmark feature HA6) may each be subject to consideration as candidates for avoidance, with preservation *in situ* likely representing the preferred mitigation option, if associated remains of importance are found to be present. These sites have been subject to geophysical survey.
187. As part of the embedded mitigation, the proposed East Anglia ONE North project has committed to undertake additional programmes of post consent survey and evaluation (to be referred to as post consent initial informative stages of mitigation work and as discussed in **Table 24.3**) which, of relevance to sub-surface archaeological remains, may include any outstanding geophysical survey, a scheme wider programme of trial trenching (post-consent), targeted field walking

and any additional metal detecting. This strategy is outlined as part of a project-specific OWSI, submitted with this DCO application, and the final details of this will be agreed with SCCAS in the final WSI developed post-consent. The initial informative stages of mitigation 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.

188. Additional mitigation beyond the initial informative stages 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);
 - Set-piece (open-area) Excavation: including subsequent post-excavation assessment, and analysis, publication and archiving;
 - Strip, Map and Record (or Sample) (SMR or SMS) Excavation: including subsequent post-excavation assessment, and analysis, publication and archiving; and
 - Watching Brief (targeted and general archaeological monitoring and recording): including subsequent post-excavation assessment, and analysis, publication and archiving (where appropriate).
189. The measures adopted by the proposed East Anglia ONE North project will be determined as the proposed East Anglia ONE North 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 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 SCCAS and HE.

24.6.1.1.3 Impacts Following Mitigation

190. 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. The widening of the order limits at key locations (see **Table 24.3** for details allows flexibility in the post-consent micrositing of the onshore cable route in order to maintain

preservation in-situ as highly likely. Alternatively, 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). 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 site / feature, the acquisition of a robust archaeological record of a site / feature 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 24.3.3**.

191. **Table 24.15** summarises the possible impacts to buried archaeological remains at the landfall; **Table 24.16** summarises the possible impacts to buried archaeological remains along the onshore cable route; and **Table 24.17** summarises the possible impacts to buried archaeological remains at the substation.

Table 24.15 Summary of possible impact to buried archaeological remains within the landfall location

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely worst-case scenario)	Mitigation Measures	Residual Effect (as a WCS)
AAA1	Former system of land division.	Low - Medium	Medium	Minor to Moderate	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 60	LiDAR feature - not accessible during walkover, but evident as a depression in the field.	Negligible - Low	Medium	Negligible to Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 61	Triangular feature - possible field drain.	Negligible to Low	Medium	Negligible to Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 62	LiDAR features - not evident during walkover.	Negligible - Low	Medium	Negligible to Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 63	LiDAR features - not evident during walkover.	Negligible - Low	Medium	Negligible to Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 64	LiDAR features - not evident during walkover.	Negligible - Low	Medium	Negligible to Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely worst-case scenario)	Mitigation Measures	Residual Effect (as a WCS)
HA 66	Ruins and traces of two structures.	Negligible - Low	Medium	Negligible to Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 67	LiDAR and AP features visible as depressions during walkover.	Negligible - Low	Medium	Negligible to Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 68	Structure recorded on the 1st Edition OS map.	Negligible - Low	Medium	Negligible to Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 69	Enclosure, field boundaries and structures.	Low - Medium	Medium	Minor to Moderate	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HER ARG 031	Diver strip diver battery S2	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HER ARG 032	Two World War Two strongpoints on Thorpeness Common.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HER ARG 033	A World War Two chain home extra low station K164	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely worst-case scenario)	Mitigation Measures	Residual Effect (as a WCS)
HER ARG 034	Diver strip diver battery S3	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HER ARG 052	World War Two coastal defences to the North of Thorpeness.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HER LCS 119	Extensive World War Two beach scaffolding.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
NRHE 1478701	Diver strip light anti-aircraft (diver) battery SD	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse

Table 24.16 Summary of possible impact to buried archaeological remains within the onshore cable corridor

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely WCS)	Mitigation Measures	Residual Effect (as a WCS)
AAA1	Former system of land division.	Low - Medium	Medium	Minor to Moderate	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
AAA2	Possible ploughed down remains of a Bronze Age barrow.	Medium	Medium to High	Moderate to Major	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
	Discrete anomalies including possible kilns	Medium	Medium	Moderate	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
AAA3	Former fields/enclosures of likely post-medieval date	Low to Medium	Low to Medium	Minor to Moderate	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
	Possible trackway and series of enclosures	Low to High	Medium to High	Minor to Major	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
AAA4	Ladder-like series of enclosures	Medium to High	Medium	Moderate to Major	Initial informative stages of mitigation work and additional mitigation	Minor adverse

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely WCS)	Mitigation Measures	Residual Effect (as a WCS)
					measures (see section 24.3.3)	
	Trackway, system of land division and small circular feature (possible ploughed-out barrow feature)	Medium to High	Medium	Moderate to Major	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
	Former field division (wider field system)	Low to Medium	Low to Medium	Minor to Moderate	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
AAA5	Possible roadside enclosure.	Medium	Low	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
AAA6	Partial remains of probable barrow	Medium	Medium	Moderate	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
	Cluster of sub-rectangular enclosures possibly dated to Middle Bronze Age through to the early Roman period (although prehistoric date is likely)	Medium	Low to Medium	Minor to Moderate	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
AAA7	A circular anomaly representative of a post-medieval windmill.	Medium	No Impact	-	N/A	-

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely WCS)	Mitigation Measures	Residual Effect (as a WCS)
AAA8	Enclosures of uncertain date (could date from Iron Age to post-medieval).	Medium	Negligible	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
AAA9	Possible roadside settlement of medieval date bordering Grove Wood	Medium	Medium - High	Moderate to Major	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
	Former system of field division of uncertain date	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 6	Possible chapel evident in AP. May represent remains of Buxlow/Buxton Chapel recorded as KND009.	Medium	High	Major	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 8	Linear features identified from LiDAR. Visible as ditch within Grove Wood, leads into rectangular enclosure ditch at its SE corner. Possibly visible in the southern field as a slight depression in the north of the field.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 9	Sub-circular feature identified from LiDAR and evident as a depression during walkover.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely WCS)	Mitigation Measures	Residual Effect (as a WCS)
HA 15	Sub-circular features identified on LiDAR, evident as depressions during walkover, and linear feature identified on APs.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 16	Linear features identified from LIDAR. Sub-rectangular features were evident as depressions during walkover, but lost field boundary was not evident.	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 22	Lost field boundary not visible in crop during walkover. No cropmarks evident.	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 25	Linear features identified from LIDAR and structures identified from APs. Linear field boundary not visible during walkover. A tree may mark the original location of the eastern extent of the now lost feature. Structures evident as modern farm buildings.	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 26	Linear features identified from APs.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 27	LiDAR feature visible as a sub-rectangular depression during walkover – approximately 3.5m deep.	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation	Minor adverse

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely WCS)	Mitigation Measures	Residual Effect (as a WCS)
					measures (see section 24.3.3)	
HA 31	Semi-circular features identified in APs.	Low to Medium	Medium	Minor to Moderate	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 32	Several curvilinear features, and a group of several pits aligned in a square.	Low to Medium	Negligible	Negligible to Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 33	LIDAR features visible as sub-rectangular depressions in field – one was waterlogged.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 34	LIDAR feature – not accessible during walkover. Sandbanks visible from the road might be associated with the feature.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 35	LIDAR feature – not accessible or evident during walkover.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 36	Circular feature identified in APs.	Low to Medium	Medium	Minor to Moderate	Initial informative stages of mitigation work and additional mitigation	Minor adverse

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely WCS)	Mitigation Measures	Residual Effect (as a WCS)
					measures (see section 24.3.3)	
HA 37	LiDAR feature – not accessible or evident during walkover.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 39	LiDAR feature not accessible during walkover.	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 41	LiDAR feature – not accessible or evident during walkover.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 42	LiDAR feature – visible as depression in field and crop marked in wheat.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 46	LiDAR feature not accessible during walkover, but some depressions visible in field.	Negligible - Low	Medium	Negligible to Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 47	Area around LCS206 – AP and LiDAR features not evident during walkover.	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation	Minor adverse

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely WCS)	Mitigation Measures	Residual Effect (as a WCS)
					measures (see section 24.3.3)	
HA 48	Possible group of small circular features maybe related to agricultural activity.	Negligible to Low	Medium	Negligible to Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 49	Circular feature.	Low to Medium	Medium	Minor to Moderate	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 51	Lost field boundary now obscured by trackway.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 53	LIDAR and AP feature evident during the walkover as a depression alongside the field boundary. Dense overgrowth present.	Negligible - Low	Medium	Negligible to Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 55	Row of pits?	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 58	AP features evident during walkover as overgrown quarry pits.	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation	Minor adverse

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely WCS)	Mitigation Measures	Residual Effect (as a WCS)
					measures (see section 24.3.3)	
HA 59	Field boundary.	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 60	LiDAR feature – not accessible during walkover, but evident as a depression in the field.	Negligible-Low	Medium	Negligible - Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HER ARG 016	Site of bridge as shown on Hodskinson's map of 1783 (S1), crossing the Hundred River.	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HER ARG 017	WWII anti-glider ditches and military training activity on The Walks, Aldringham Common.	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HER ARG 028	A slit trench of World War Two date in Aldringham cum Thorpe parish.	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HER ARG 031	Diver strip diver battery S2.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation	Minor adverse

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely WCS)	Mitigation Measures	Residual Effect (as a WCS)
					measures (see section 24.3.3)	
HER ARG 057	Aldringham historic settlement core (Med)	Low to Medium	Negligible	Negligible to Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HER KND 007	Half of a ring ditch or circular enclosure of unknown date, visible as a cropmark.	Low to Medium	Medium	Minor to Moderate	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HER KND 015	Littlemoor Farm, an enclosed area formerly (on C19 maps) containing 4 dwellings, now demolished.	Low	Negligible	Negligible	None required	Negligible
HER LCS 063	A WWII Diver anti-aircraft battery is visible as structures on aerial photographs. The site is now arable and there is no evidence that any elements survive; an evaluation in the area of the site noted large amounts of modern building material.	Low	Negligible	Negligible	None required	Negligible
HER LCS 113	World War Two anti-tank ditch.	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HER LCS 117	Quarry pit of unknown date.	Low	Negligible	Negligible	None required	Negligible
HER LCS 202	Site of two probable First World War pillboxes.	Low	Medium	Minor	Initial informative stages of mitigation work and	Minor adverse

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely WCS)	Mitigation Measures	Residual Effect (as a WCS)
					additional mitigation measures (see section 24.3.3)	
HER LCS 203	WWII training area and/or strong point.	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HER LCS 206	Site of Leiston Very High Frequency (VHF) Fixer Station.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HER LCS 210	Site of fragmentary cropmarks of unknown date and significance.	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HER LCS 213	Diver strip diver battery S1.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HER LCS 214	Site of double-ditched enclosure and probably associated boundary ditches and trackways of unknown date.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely WCS)	Mitigation Measures	Residual Effect (as a WCS)
HER LCS 215	Site of possible Bronze Age round barrow or medieval to post medieval mill mound, The Walks.	Low to Medium	Medium	Minor to Moderate	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
NRHE 1478561	Diver strip diver battery S15.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
NRHE 1478677	Diver strip light anti-aircraft (diver) battery SA.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse

Table 24.17 Summary of possible impact to buried archaeological remains within the National Grid substation and onshore substation area

Source / ID	Summary Description	Heritage Importance	Magnitude of Effect	Impact Significance (as a likely WCS)	Mitigation Measures	Residual Effect (as a WCS)
AAA9	Former system of field division of uncertain date	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
AAA10	Cluster of enclosures possibly dating from later prehistoric to early post-Roman periods.	Medium	Low	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
AAA11	L-shaped arrangement of enclosures	Medium to High	Negligible - Low	Minor to Moderate	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 1	Identified from LiDAR images - depression alongside field boundary evident during walkover.	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 2	Identified from LiDAR not evident during walkover as under crop.	Low	Low - Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 3	The remains of an orchard, and several linear and curvilinear features visible in APs and on LiDAR images. An extant ditch evident during the walkover may represent a lost field boundary (LF2).	Low	Medium - High	Minor - Moderate	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 4	A number of possible small buildings evident in AP.	Low	Low - Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse

Source / ID	Summary Description	Heritage Importance	Magnitude of Effect	Impact Significance (as a likely WCS)	Mitigation Measures	Residual Effect (as a WCS)
HA 5	Depression underlying field boundary, evident during walkover.	Low	Low - Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 13	Sub-circular feature identified from LiDAR and evident as a depression during walkover.	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 14	Band of possible features or geology identified in APs.	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HA 72	Possible building identified on LiDAR images.	Low	Negligible	Negligible	None required	Negligible
HER KND 009	1753: Symbol for 'church or chapel in ruins' on Bowen's map of Suffolk at 'Buxton', north of Friston church. Structure may actually be represented by cropmark HA6.	Medium	Medium	Moderate	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HER KND 011	Little Moor farm; Buxlow parsonage	Medium	Negligible	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
HER KND 016	Old Kiln Field; Kiln Field; Buxlow	Low	Low - Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse

192. With the application of site specific / additional mitigation (as outlined in **section 24.3.3.1** and **24.6.1.1.2**) it is anticipated that the residual impact 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 1 at all receptors).

24.6.1.2 Impact 2: Direct Impact on (permanent change to) Above Ground Archaeological Remains and Heritage Assets e.g. historic earthworks (including Historic Landscape Character); and built heritage (buildings, structures etc.)

193. Impacts resulting in potential effects as part of construction works are those associated with intrusive groundworks (**section 24.6.1.1**). Any adverse impacts may be permanent and irreversible in nature. In the absence of mitigation, direct physical impacts on the significance of above ground archaeological remains are often considered to be of high magnitude. However, the extent of any impact will often depend on the presence and nature of any such remains, in association with the proposed location 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 above ground archaeological remains / heritage assets (as indicated by available data) is considered unlikely or limited in terms of impact upon the asset's heritage significance. The magnitude of direct physical impacts on above ground archaeological remains / heritage assets during the construction phase could therefore range from negligible to high.
194. Extant earthworks and field boundaries are an integral part of the HLC. Any loss of such features arising as a result of construction-related activities therefore has the potential to impact upon the HLC of the onshore development area and wider surrounds. This change to the HLC arising from the potential loss of above ground features is also discussed (in **section 24.6.1.2.1**).

24.6.1.2.1 Impacts Prior To Mitigation

24.6.1.2.1.1 Landfall Location

195. Construction activities within the landfall location that have the potential to directly impact above ground archaeological remains and heritage assets are those associated HDD works, cable trenching, landfall CCS and groundworks associated with transition bay installation (up to four drills including two transition bays for the proposed East Anglia ONE North project).
196. Data available and assessed to date within the landfall location indicates the presence of a number of potential above ground heritage assets (see **Figure 24.3**

and **Table 24.18**) (ARG 031-034, ARG 052 and ARG 070), all of which relate to WWII defence measures. Based on information available to date, any above ground extant features associated with these assets will likely be regarded as heritage assets of low heritage importance.

197. As detailed design parameters will be developed post-consent, it could be possible that direct physical impacts to potential above ground archaeological remains and heritage assets, as part of construction works at the landfall, could result in a medium adverse magnitude of impact, thereby resulting in a **minor adverse** significance of effect (prior to site-specific/additional mitigation), based on a likely WCS. This is with the exception of ARG 033 which has been assigned a low magnitude of effect based on a moderate interaction with the landfall location (and therefore also **minor adverse**) and ARG 070 which intersects the onshore development area to such a small degree that any magnitude of effect is likely to be negligible, thereby equating to a **negligible adverse** significance of effect. These anticipated scenarios will be further established through the earthwork identification survey strategy to inform and contribute to the development of mitigation strategies, in relation to the archaeological and cultural heritage resource, in the post-consent stages of the project, subject to access permissions being granted, (see the OWSI submitted with this DCO application for further details).
198. With regards to the HLC (see **Figure 8** in **Appendix 24.3**), the areas mapped as common pasture and enclosures of 18th century and later date at the eastern extent of the onshore development area will experience a temporary level of change to HLC during construction.

24.6.1.2.1.2 Onshore Cable Corridor

199. Construction activities along the onshore cable corridor that have the potential to directly impact above ground archaeological remains and heritage assets are those associated with onshore cable route trenching, potential trenchless techniques (HDD) and groundworks associated with CCS footprints and jointing bay and link box installation.
200. Data available and assessed to date within the onshore cable corridor indicates the presence of a number of above ground heritage assets (**Figure 24.3**), comprising remains relating to WWII defence measures (ARG 031, LCS 203 and LCS 213), the Aldeburgh / Leiston branch railway line (ADB 226) and earthworks of unknown date (LCS 216). Based on information available to date, these features will likely be regarded as heritage assets of low importance.
201. Direct physical impacts to potential above ground archaeological remains and heritage assets, as part of construction works across the onshore cable corridor,

could result in a low to medium adverse magnitude of impact on assets of minor to medium heritage importance. This results in a **minor adverse** significance of effect (prior to site specific / additional mitigation as the detailed design will be finalised post-consent), based on a likely WCS. These anticipated scenarios will be further established through the strategy to undertake earthwork identification survey, – site access permitting, in order to inform the post-consent mitigation stages of the proposed East Anglia ONE North project (see the OWSI submitted with this DCO application for further details).

202. The cable corridor also crosses five parish boundaries (PB2-6) (**Figure 16** in **Appendix 24.3** and **Figure 24.3** and **Table 24.19**). Any hedgerows associated with these boundaries 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 low adverse magnitude of impact upon any such hedgerows (where present, given the limited interaction between the boundaries and the cable corridor), resulting in a **minor adverse** significance of effect, as a likely WCS.
203. The predominant HLC types of 18th century and later enclosures within the majority of the onshore cable corridor will experience a temporary level of change to HLC during construction, as will the more discrete HLC types represented variously across the onshore cable corridor (common pasture, pre-18th century enclosure, post-1950 agricultural landscape and meadow/managed wetland and woodland flanking and in the vicinity of the Hundred River (see **Figure 8** in **Appendix 24.3**). The onshore cable corridor also includes five parish boundaries (PB2-PB6) (see **Figure 24.3**). Any hedgerows associated with these boundaries would be classed as “Important Hedgerows” and are therefore considered to be heritage assets of likely medium heritage importance (as the highest likely level of heritage significance). Construction along the onshore cable corridor has the potential to result in a medium adverse magnitude of impact upon any such hedgerows (where present), resulting in a **moderate adverse** significance of effect prior to mitigation, as a WCS.

24.6.1.2.1.3 National Grid Substation and Onshore Substation

204. Construction activities relating to the onshore substation and National Grid substation location that have the potential to directly (physically) impact above ground archaeological remains and heritage assets are those associated with groundworks relating to substation construction, pylon relocation, sealing end / gantries and associated compounds.
205. As part of this assessment, only one non-designated heritage asset potentially representative of above ground remains has been identified – the former

medieval common of Friston Moor (FRS 013). Most of the margin of Friston Moor still survives, with the exception of part of the north side and a stretch between Moor Farm and Little Moor Farm. The loss of any margins associated with the former common would be considered as representing a change to the HLC.

206. The presence of the onshore substation will represent a permanent / long-term change to the HLC to the west of Coldfair Green (and more specifically the north-west of Grove Wood) within and immediately surrounding the onshore substation location. The HLC of this area is mapped as predominantly comprising pre-18th century enclosure and post-1950 agricultural landscape (see **Figure 9** in **Appendix 24.3**).
207. The onshore substation and National Grid substation location also includes one parish boundary (PB1) (**Figure 16** in **Appendix 24.3** and **Figure 24.3h** and **Table 24.20**). Any hedgerows associated with this boundary 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 medium adverse magnitude of impact upon any such hedgerows (where present), resulting in a **moderate adverse** significance of effect, as a likely WCS.
208. No intrusive groundworks are proposed in the location (within the property boundary) of the Grade II Listed Little Moor Farm (1215743) (as such **no impact** in this category is anticipated).

24.6.1.2.2 Additional Mitigation

209. As part of the avoidance, micro-siting and onshore cable route refinement embedded into the design of the proposed East Anglia ONE North project (see **section 24.3.3**), where possible, opportunities have been sought for the avoidance of above ground heritage assets, ensuring that archaeological and cultural heritage considerations inform and play an active role in ongoing design decisions, within the confines of other environmental and engineering constraints.
210. As part of the embedded mitigation, the proposed East Anglia ONE North project has also committed to undertake additional programmes of post consent survey and evaluation (to be referred to as initial informative stages of mitigation work as described in **section 24.3.3.1.1**). This strategy is outlined as part of a proposed East Anglia ONE North project-specific OWSI, which includes a range of likely mitigation options and responses to be utilised under various scenarios. The final WSI will be prepared post-consent in agreement with SCCAS and HE.

211. Earthwork condition surveys and built heritage / historic building surveys and recording are two approaches that are likely to be implemented at certain locations as part of post-consent initial informative stages of mitigation work. This may be followed by additional backfilling, reinstatement and conservation / restoration requirements, where required on a case-by-case basis.
212. Impact to the HLC (including hedgerows and parish boundaries) will be minimised by returning field boundaries / areas / hedgerows to their preconstruction condition and character post-construction, as part of a sensitive programme of backfilling and reinstatement / landscaping (see **section 24.3.3.1**). Certain hedgerows and field boundaries (e.g. parish boundaries) may require recording prior to the construction process and enhanced provisions made during backfilling and reinstatement. Further detail regarding hedgerow reinstatement is provided in the OLEMS, as secured under the requirements of the draft DCO and submitted with this DCO application, the final LMP will be produced post-consent and agreed with the relevant regulators.
213. The mitigation measures adopted by the proposed East Anglia ONE North project will be determined as the proposed East Anglia ONE North 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 archaeological and cultural heritage survey and assessment, initial targeted surveys (**Table 24.3**) and post-consent investigations (**section 24.3.3.1.1**) of the proposed East Anglia ONE North project.

24.6.1.2.3 Impacts Following Mitigation

214. With the application of embedded and site specific / additional mitigation (as outlined in **section 24.6.1.2.2**), it is anticipated that the residual impacts and associated significance of effects will be reduced or offset to levels considered non-significant in EIA terms (i.e. anticipated to be no worse than **minor adverse**).

Table 24.18 Summary of possible impact to above ground archaeological remains within the landfall location

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely WCS)	Mitigation Measures	Residual Effect (as a WCS)
ARG 031	WWII Strongpoint and Diver Battery: diver battery / pill box extant in scrubland although associated earthworks are not visible	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see	Minor adverse

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely WCS)	Mitigation Measures	Residual Effect (as a WCS)
					section 24.3.3)	
ARG 032	WWII Two Strongpoints: Possibly visible from beachfront as decayed metal eroding from cliff face and concrete collapsed onto beachfront	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
ARG 033	WWII Chain home: ceramic building material and concrete rubble eroding from top of cliff face may be associated with this heritage asset	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
ARG 034	WWII Strong point and Diver battery: ceramic building material and concrete rubble eroding from top of cliff face may be associated with this heritage asset	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
ARG 052	WWII coastal defences: eroded re-enforced concrete lumps located on beach	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
ARG 070	Earthworks of WWII anti-glider ditches	Low	Negligible	Negligible	None required	Negligible

Table 24.19 Summary of possible impact to above ground archaeological remains within the onshore cable corridor

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely WCS)	Mitigation Measures	Residual Effect (as a WCS)
ADB 226	Aldeburgh / Leiston branch railway line: Now forms a trackway with a bank associated with the railway line extant on the east side. Railway house and extant line are located outside of the onshore development area.	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
ARG 031	WWII Strongpoint and Diver Battery: diver battery / pill box extant in scrubland although associated earthworks are not visible	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
LCS 203	WWII training area and / or strongpoint: Although much of the site was dismantled, some earthworks are thought to still survive.	Low	Low	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
LCS 213	WWII Diver battery: The site was dismantled at the end of the war but parts of the trackways still survive, as may some of the hard standings (although this was not confirmed during the walkover survey, with features within	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely WCS)	Mitigation Measures	Residual Effect (as a WCS)
	this area obscured by overgrowth).					
LCS 216	Linear and rectilinear earthworks of unknown date: visible as earthworks on aerial photographs of The Walks, Aldringham Common – although features within this area were not confirmed during the walkover survey due to being obscured by the overgrowth	Low	Medium	Minor	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse

Table 24.20 Summary of possible impact to above ground archaeological remains the National Gird substation and onshore substation area

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely WCS)	Mitigation Measures	Residual Effect (as a WCS)
FRS 013	Friston Moor, a former common.	Medium	Medium	Moderate	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse

215. The preferred and optimum mitigation measure is preservation *in situ*, wherever possible. By avoiding above ground archaeology or cultural heritage assets, either largely or in their entirety (as indicated by existing and available data), the magnitude of impact may be reduced (with reference to change or impact upon heritage significance) and depending upon the degree to which preservation *in situ* has been applied. Alternatively, where avoidance is not possible, significant impacts upon above ground archaeology or cultural heritage assets may potentially, to a degree, be off-set by the application of appropriate alternative mitigation measures, which serve to preserve earthworks/assets, where present, by record (e.g. through detailed earthwork survey and recording or historic building record to appropriate levels). 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 earthwork or asset, the acquisition of a robust record 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 24.3.3**.

24.6.1.3 Impact 3: Indirect (non-physical) Impact as a result of change in the Setting of Heritage Assets (both Designated and Non-Designated)

216. Activities undertaken as part of construction works for the proposed East Anglia ONE North project have the potential to impact designated and non-designated heritage assets in an indirect (non-physical) manner, associated with change in their setting. Temporary indirect non-physical impacts resulting from change in the setting of heritage assets, should they occur, may do so through the presence of machinery, construction traffic and general construction activities taking place within the onshore development area. The sight, sound, any dust created, and even smell, during the construction phase has the potential to indirectly (non-physically) impact the setting of heritage assets and their associated heritage significance. For further details refer to **Chapter 19 Air Quality** and **Chapter 25 Noise and Vibration**.

24.6.1.3.1 Impacts Prior to Mitigation

217. The heritage settings assessment (see **Appendix 24.3, section 3.8** and **Appendix 24.7**) was informed by site visits to understand how the proposed East Anglia ONE North project would potentially change the setting of each asset and whether these changes would impact on the significance of the asset. The assessment concluded that only changes in setting due to the operation of the proposed East Anglia ONE North project would be of sufficient duration to merit more detailed assessment. Any changes in setting due to construction activities would be temporary and of sufficiently short duration that they would not give rise to material harm. Indirect (non-physical) impacts as a result of change in the setting of heritage assets during the construction phase have therefore been excluded from further consideration (i.e. **no impact**). **Section 24.6.2.1** provides detail on the potential impacts on setting during the operation phase.

24.6.1.4 Impact 4: Impact on Potential Geoarchaeological / Palaeoenvironmental Remains, Potentially Indicative of Former Land Surfaces

218. It is possible that elements of the proposed East Anglia ONE North project may affect below ground deposits, both within the onshore development area and over a wider area than that of the footprint of the infrastructure. For example, the proposed project may lead to hydrological changes that may cause desiccation and drying out of wetland deposits and associated preserved waterlogged

archaeological remains. Impacts resulting in potential effects as part of construction works are those associated with intrusive groundworks (**section 24.6.1.1**).

219. As the presence / absence, nature and extent of deposits of geoarchaeological and palaeoenvironmental interest is currently unknown (or not fully established) within the onshore development area, it is not possible to identify potential impacts according to the various elements of construction. As such, the following WCS approach must be considered as potentially relevant to all elements and scenarios in which ground works are anticipated to take place.

24.6.1.4.1 Impacts Prior to Mitigation

220. Potential geoarchaeological and / or palaeoenvironmental remains within the onshore development area may exist in association with Holocene / pre-Holocene beach deposits (if present) at the landfall. Extensive Holocene deposits are known to occur in the wider vicinity, in the Fenland of eastern England (Lincolnshire, Cambridgeshire, Norfolk and including a small area of Suffolk), comprising a low and marshy coastal plain underlain by a sequence of marine-brackish sediments and peat (e.g. Brew et al. 2000). Waterlogged deposits / gravel terraces of the Hundred River may also contain geoarchaeological and / or palaeoenvironmental remains. In addition, two features described as possible palaeochannels (HA26 and HA44) were identified as part of the aerial photographic and LiDAR data analysis undertaken as part of the ADBA (see **Figure 24.3** and **Figure 4** in **Appendix 24.3**). Only one feature intersects the onshore development area, HA26, to the south-east of Knodishall Common. HA44 is beyond the parameters of the onshore development area, but is within the ISA, to the north of Aldringham Common.
221. On the basis of the potential outlined above, those works requiring HDD taking place within the landfall (and potential trenchless techniques elsewhere alongside the onshore cable route at key crossing locations) and cable installation / associated ground works at the Aldringham crossing are considered to be of particular interest in relation to geoarchaeological and palaeoenvironmental remains within the onshore development area.
222. In the absence of further information, a precautionary medium to high heritage importance has been assigned to potential palaeoenvironmental and geoarchaeological remains under a WCS. As detailed design parameters will be finalised post-consent, it could be considered that direct impacts to geoarchaeological and palaeoenvironmental remains, as part of construction works, could result in a low to medium adverse magnitude of impact, thereby resulting in a **minor to major** adverse significance of effect (prior to site specific / additional mitigation), based on a likely WCS.

24.6.1.4.2 Additional Mitigation Measures

223. As part of the embedded mitigation, the proposed East Anglia ONE North project has committed to undertake additional programmes of survey and evaluation (to be referred to as post consent initial informative stages of mitigation work as described in **section 24.3.3.1.1**). This strategy is outlined as part of the project-specific OWSI, which includes a range of likely mitigation options and responses to be utilised under various scenarios. The final WSI will be prepared in agreement with SCCAS and HE.
224. 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 proposed East Anglia ONE North project, to be set-out as part of the additional mitigation measures and strategies in the WSI.

24.6.1.4.3 Impacts Following Mitigation

225. With the application of site specific / additional mitigation (as outlined in **section 24.3.3** and **24.6.1.4.2**) it is anticipated that any residual impacts and associated significance of any effects will be reduced or offset to levels considered non-significant in EIA terms (i.e. anticipated to be no worse than **minor adverse**).
226. The programme of geoarchaeological monitoring and any subsequent post-consent project-wide approach to geoarchaeological assessment / palaeoenvironmental survey (implemented as necessary), may potentially identify deposits of palaeoenvironmental and geoarchaeological interest so that impacts upon deposits that may contain e.g. prehistoric archaeological material (where present) can be mitigated in a manner that is both appropriate and proportionate to the heritage significance and importance of any remains encountered. For example, should any *in situ* remains be encountered, the preferred and optimum mitigation measure is preservation *in situ*, wherever possible.
227. As discussed in **section 24.6.1.1.3**, avoiding sub-surface archaeological remains (sites / features / deposits), 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 / deposit in question (including where heritage significance is derived from) and the degree to which preservation *in situ* has been applied. Alternatively, where avoidance is not possible, significant

impacts upon sub-surface archaeological remains (including geoarchaeological deposits) may potentially to a degree be off-set by the application of appropriate alternative mitigation measures which serve to preserve archaeological and geoarchaeological remains, where present, by record (e.g. following geoarchaeological monitoring and subsequent geoarchaeological specific interventions measures, where required). Although preservation by record cannot be considered to reduce the magnitude of impacts given the potential physical loss of a given site / feature / deposit, the acquisition of a robust archaeological and geoarchaeological record of a site / feature / deposit may be considered to adequately compensate identified, recognised and acceptable harm to a heritage asset (or important geoarchaeological deposit) in line with industry standard good practice mitigation measures and compatible with definitions outlined in **section 24.3.3**.

24.6.1.5 Impact 5: Impact to Site Preservation Conditions from Drilling Fluid Breakout or Oil Spills

228. A breakout of oil spills associated with transformer filling operations or drilling fluid (employed during the drilling process during HDD works) during construction works may have the potential to spread into archaeological deposits, features and materials thereby causing an adverse impact and ultimately significant effect upon site preservation.

24.6.1.5.1 Impacts Prior to Mitigation

229. Although there is the potential for small oil spills associated with transformer filling operations, the embedded application of best practice measures would ensure that any leakage would be dealt with quickly and efficiently, thus ensuring that construction activities will not give rise to a major transformer leak. These details are further provided in the Outline Code of Construction Practice (OCoCP), as secured under the requirements of the draft DCO and submitted with this DCO application.

230. The drilling fluid used during HDD works is typically a mixture of water and bentonite or polymer continuously pumped to the cutting head or drill bit to facilitate the removal of cuttings, stabilise the borehole, cool the cutting head, and lubricate the passage of the product pipe. Bentonite is a common drilling fluid for HDD and is a naturally occurring clay which, when mixed with water, provides a gel like lubricant known as 'drilling mud' for the drilling process. Bentonite typically has a neutral pH level similar to that of water / seawater. In order to minimise the potential for breakout of the drilling fluid throughout the drilling process itself, measures embedded into the design of working activities will ensure that fluid pressures will be monitored to minimise the potential for breakout and an action plan will be developed and procedures adopted so that

any drilling fluid breakout is handled quickly and efficiently. Once the drilling process is complete, the fluid would retain a ring-shaped form around the duct, with no potential to spread into surrounding deposits.

231. The potential for oil spills / drilling fluid to breakout and spread into / 'coat' archaeological deposits, features and materials (assigned a precautionary medium to high heritage importance, as a WCS), thereby causing an adverse impact upon site preservation, has as such been assessed as being of negligible magnitude of impact, resulting in a **minor adverse** significance of effect as a WCS, and has therefore been excluded from further consideration.

24.6.2 Potential Impacts during Operation

232. 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 physical impacts to buried archaeological remains during operation have been scoped out of further assessment.
233. The presence of above ground infrastructure could, however, have an indirect (non-physical) impact on heritage significance as a result of change in the setting of heritage assets due to the presence of new above ground onshore infrastructure associated with the proposed East Anglia ONE North project being introduced to and present within the landscape.

24.6.2.1 Impact 1: Indirect (non-physical) Impact Resulting from Change in the Setting of Heritage Assets (both Designated and Non-Designated)

234. The following paragraphs represent summary information from the executive summary and conclusions within **Appendix 24.7** where the main assessment has been undertaken and findings reached with respect to 'The impact of onshore infrastructure in the setting of heritage assets'. **Appendix 24.3 (section 3.8)** contains the initial onshore settings work undertaken, prior to more detailed assessment, as included within **Appendix 24.7**.
235. Two areas were identified where the operation of onshore infrastructure would lead to material change in the setting of heritage assets:
- A section of the cable route in an area of woodland immediately to the south of Aldringham Court (1393143) (a Grade II Listed Building); and
 - Land in the vicinity of the proposed substations at Friston.
236. Eight designated heritage assets (all Listed Buildings) were identified in these two areas where change in setting could lead to material harm to their significance.

- Little Moor Farm (1215743, Grade II).
 - High House Farm (1216049, Grade II).
 - Friston House (1216066, Grade II).
 - Woodside Farmhouse (1215744, Grade II).
 - Church of St Mary, Friston (1287864, Grade II*).
 - Friston War Memorial (1435814, Grade II).
 - Friston Post Mill (1215741, Grade II*).
 - Aldringham Court (1393143, Grade II).
237. Onshore underground cables will pass through woodland to the south of Aldringham Court within land that was formerly part of the grounds to the house. It is concluded in **Appendix 24.7** that this land makes a very limited contribution to the significance of the Listed Building and the clearing of a swathe through this area of woodland would have only a very limited impact on the experience of the house in an informal woodland setting. It is considered that this change in setting is not sufficient to materially diminish the contribution that it makes to the significance of the house.
238. Aldringham Court is a designated asset of medium heritage importance, the magnitude of has been assessed as negligible adverse and as such the resulting significance of effect is also concluded as minor adverse.
239. For the seven assets (**Figure 1** in **Appendix 24.7**) in the vicinity of the onshore substation at Friston it is the presence of the onshore substation and National Grid substation, rather than the proposed permanent overhead realignment works that would lead to adverse impact on significance. These impacts are caused primarily by the extent and visual prominence of the onshore substation and National Grid substation which would change the landscape character in the settings of heritage assets currently experienced and appreciated in a rural agricultural setting. In the case of the Church of St Mary, Friston (1287864), additional impact on significance is caused by the substations blocking valued views towards the church (of high heritage importance) and the partial loss of a footpath along and from which a view of the church can currently be experienced (low magnitude of impact); resulting in a moderate adverse significance of effect.
240. With respect to the East Anglia ONE North project, magnitude of impact (equated to harm) is greatest for the historic farmhouse that is closest to the proposed East Anglia ONE North onshore substation, and as such Little Moor Farm (1215743) would experience adverse impacts of medium magnitude. Woodside Farm (1215744), High House Farm (1216049), Friston House (1216066), Friston Post Mill (1215741) and Friston War Memorial (1435814) would all experience lesser

levels of impact. These impacts are summarised in **Table 24.20** and given in further detail in **Appendix 24.7**.

241. An Outline Landscape Mitigation Plan, as a section of the OLEMS submitted with this DCO application and secured under the requirements of the draft DCO, has been developed that seeks, among other objectives, to reduce adverse impacts on the heritage assets at Friston. The OLEMS has been developed to take into consideration historic landscape and re-establishing historic field boundaries. In areas to the immediate north of Friston, the re-establishment of historic field boundaries, filling gaps in existing hedgerows and introducing field boundary trees has been proposed to provide layered screening, rather than large-scale woodland planting close to the village. This allows the 'setting' of Friston to be retained (rather than being contained by woodland). Reinstatement of hedges with substantial gaps and new field trees are proposed to north of Friston. These proposals focus on the re-establishment of historic field boundary hedgerows / tree lines; as well as tree blocks set back from farm houses (e.g. Covert woods).
242. In the area to the north of the onshore substation and National Grid substation, the OLEMS has proposed the establishment of larger woodland blocks akin to the existing pattern of woodland blocks within the wider landscape.
243. The OLEMS has proposed planting not to enclose the historic farms in woodland, as this is not how they would have been experienced in the past. The re-establishment of historically mapped tree-lined enclosures close to the farms has been proposed, to retain farms in an open farmed landscape, whilst achieving screening through multiple lines of planting.
244. The results of the assessments of residual impacts, after mitigation, are summarised in **Table 3** in **Appendix 24.7**. This has achieved some reduction in impact, particularly for Woodside Farm. In other cases, there is some benefit but not enough to substantively change the findings of the assessment. As a result, residual impact at Little Moor Farm is still considered to be of medium magnitude. Residual significance of effects are presented in **Table 24.21** and given in further detail in **Appendix 24.7**.

Table 24.21 Summary of possible impact resulting from change in the setting of heritage assets

Source / ID	Summary Description	Heritage Importance	Magnitude of Impact	Significance of Effect (as a likely WCS)	Mitigation Measures	Residual Effect (as a WCS)
1215743	Little Moor Farm	Medium	Medium	Moderate	OLEMS	Moderate Adverse
1216049	High House Farm	Medium	Low	Minor	OLEMS	Minor Adverse
1216066	Friston House	Medium	Negligible	Minor	OLEMS	Minor Adverse
1215744	Woodside Farmhouse	Medium	Low	Minor	OLEMS	Minor Adverse
1287864	Church of St Mary, Friston	High	Low	Moderate	OLEMS	Moderate Adverse
1435814	Friston War Memorial	Medium	Negligible	Minor	OLEMS	Minor Adverse
1215741	Friston Post Mill	High	Negligible	Minor	n/a	Minor Adverse
1393143	Aldringham Court	Medium	Negligible	Minor	n/a	Minor Adverse

245. In all cases, both with and without mitigation, any adverse impacts on significance identified in **Appendix 24.7** and summarised in this chapter are considered to represent less than substantial harm for the purposes of the NPS and NPPF, i.e.: no greater than a medium adverse magnitude of impact and moderate adverse significance of effect.

24.6.2.2 Impact 2: Impacts to Archaeological Site Preservation Conditions, where present, from Heat Loss from Installed Cables

246. Underground cables generate heat which dissipates naturally to the surrounding ground during power transmission. The heat loss from electrical cables has the potential to have a damaging effect on any waterlogged archaeological remains that may be present, such as palaeoenvironmental / geoarchaeological remains, other organic material and waterlogged wood.

24.6.2.2.1 Impacts Prior To Mitigation

247. The maximum heat loss and subsequent dissipation of heat through the soil will not be determined until the soil structure (thermal properties) and final engineering design are known and confirmed. However, it is expected that any heat dissipation will be localised and confined to the areas immediately surrounding the onshore cables and ducts. Given that the areas within the immediate locality of the onshore cables will have been subject to disturbance as

a result of onshore cable installation, any sub-surface archaeological / geoarchaeological remains (where present) therein will have been considered as vulnerable to the impacts of onshore cable installation works, with any assets identified already having been subject to the initial informative stages of mitigation work. On this basis, there is **no impact** anticipated during operation associated with the heat loss from onshore cables. This impact is therefore excluded from further consideration.

24.6.3 Potential Impacts during Decommissioning

248. No decision has been made regarding the final decommissioning policy for the onshore infrastructure as it is recognised that industry best practice, rules and legislation change over time. An Onshore Decommissioning Plan will be provided, as secured under the requirements of the draft DCO. The onshore substation will likely be removed and be reused or recycled. It is anticipated that the onshore cable would be decommissioned (de-energised) and either the cables and jointing bays left *in situ* or removed depending on the requirements of the Onshore Decommissioning Plan approved by the Local Planning Authority. 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. As such, for the purposes of a worst-case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase.

24.7 Cumulative Impacts

24.7.1 Cumulative Impact with proposed East Anglia TWO Project

249. The East Anglia TWO offshore windfarm project (the proposed East Anglia TWO project) is also in the application phase. The proposed East Anglia TWO project has a separate DCO application which has been submitted at the same time as the proposed East Anglia ONE North project. The two projects share the same landfall location and onshore cable corridor and the two onshore substations are co-located, and connect into the same National Grid substation.

250. The proposed East Anglia ONE North project CIA therefore initially considers the cumulative impact with only the East Anglia TWO project.

251. The CIA considers the proposed East Anglia ONE North project and the proposed East Anglia TWO project under two construction scenarios:

- Scenario 1 - the proposed East Anglia ONE North project and proposed East Anglia TWO project are built simultaneously; and
- Scenario 2 - the proposed East Anglia ONE North project and the proposed East Anglia TWO project are built sequentially.

252. The worst case (based on the assessment of these two construction scenarios) for each impact is then carried through to the wider CIA which considers other developments which have been screened into the CIA (**section 24.7.2**). The operational phase impacts will be the same irrespective of the construction scenario. For a more detailed description of the assessment scenarios please refer to **Chapter 5 EIA Methodology**.
253. Full assessment of scenario 1 and scenario 2 can be found in **Appendix 24.2**. This assessment found that scenario 2 represented the worst case impacts for archaeology and cultural heritage. A summary of those impacts can be found in **Table 24.22**.

Table 24.22 Summary of Potential Impacts Identified for Archaeology and Cultural Heritage under Construction Scenario 2

Potential Impact	Asset	Heritage Importance (WCS)	Magnitude of Impact (as a WCS)	Significance of Effect (as a WCS)	Mitigation Measures	Residual Effect (as a WCS)
Cumulative Construction Impacts with the proposed East Anglia TWO project						
Impact 1: Direct Physical Impact on (Permanent Change to) Buried Archaeological Remains	Buried Archaeological Remains	A range: ≤ High	A Range: ≤ High	Major adverse	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
Impact 2: Direct Impact on (permanent change to) Above Ground Archaeological Remains and Heritage Assets	Above Ground Archaeological Remains and Heritage Assets	A range: ≤ Medium	A range: ≤ Medium	Moderate adverse	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
Impact 3: Indirect (non-physical) Impact resulting from change in the Setting of Heritage Assets (both Designated and Non-Designated)	Heritage Assets (both Designated and Non-Designated)	A range: ≤ High	No Impact	No impact / no change	n/a	No impact / no change

Potential Impact	Asset	Heritage Importance (WCS)	Magnitude of Impact (as a WCS)	Significance of Effect (as a WCS)	Mitigation Measures	Residual Effect (as a WCS)
Impact 4: Impact on potential Geoarchaeological / Palaeoenvironmental remains, potentially indicative of former land surfaces	Geoarchaeological / Palaeoenvironmental remains	A range: ≤ High	A Range: ≤ Medium	Major adverse	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
Impact 5: Impact to site preservation conditions from drilling fluid breakout or oil spills	Buried Archaeological Remains	≤ High	Negligible	Negligible	n/a	Negligible
Cumulative Operation Impacts with the proposed East Anglia TWO project						
Impact 1: Indirect (non-physical) Impact resulting from change in the Setting of Heritage Assets	Heritage Assets (Designated):	A range:	Medium	Moderate Adverse	Landscape Mitigation detailed in OLEMS (document reference 8.7)	Moderate Adverse
	Little Moor Farm (Grade II)	Medium				
	High House Farm (Grade II)	Medium	Low	Minor Adverse	OLEMS	Minor Adverse
	Friston House (Grade II)	Medium	Negligible	Minor Adverse	OLEMS	Minor Adverse

Potential Impact	Asset	Heritage Importance (WCS)	Magnitude of Impact (as a WCS)	Significance of Effect (as a WCS)	Mitigation Measures	Residual Effect (as a WCS)
	Woodside Farmhouse (Grade II)	Medium	Medium	Moderate Adverse	OLEMS	Minor Adverse
	Church of St Mary (Grade II*)	High	Low	Moderate Adverse	OLEMS	Moderate Adverse
	Friston War Memorial (Grade II)	Medium	Negligible	Minor Adverse	OLEMS	Minor Adverse
	Friston Post Mill (Grade II*)	High	Negligible	Minor Adverse	n/a	Minor Adverse
	Aldringham Court (Grade II)	Medium	Negligible	Minor Adverse	n/a	Minor Adverse
Impact 2: Impacts to archaeological site preservation conditions, where present, from heat loss from installed cables	Buried Archaeological Remains	A range: ≤ High	No Impact	No impact/change	n/a	No impact / no change
Cumulative Decommissioning Impacts with the proposed East Anglia TWO project						
<p>No decision has been made regarding the final decommissioning policy for the onshore infrastructure as it is recognised that industry best practice, rules and legislation change over time. An Onshore Decommissioning Plan will be provided, as secured under the requirements of the draft DCO. The onshore substation will likely be removed and be reused or recycled. It is anticipated that the onshore cable would be decommissioned (de-energised) and either the cables and jointing bays left <i>in situ</i> or removed depending on the requirements of the Onshore Decommissioning Plan approved by the Local Planning Authority. 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. As such, for the purposes of a worst-case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase.</p>						

24.7.2 Cumulative Impact Assessment with Other Developments

254. Cumulative impacts are those which arise from the interaction of the proposed East Anglia ONE North and East Anglia TWO projects with other known plans or projects. The assessment of cumulative impacts has been undertaken here as a two stage process. Firstly, all impacts considered in **section 24.6** have been assessed for the potential to act cumulatively with other projects. Potential cumulative impacts are set out in **Table 24.23**.
255. The second stage of the CIA is an assessment of whether there is spatial and temporal overlap between the extent of potential impacts of the onshore infrastructure and the potential impacts of other projects scoped into the CIA upon the same receptors. To identify whether this may occur, the potential nature and extent of impacts and associated effects arising from all projects scoped into the CIA have been identified and any overlaps between these and the impacts identified in **Table 24.23**. Where there is an overlap, an assessment of the cumulative magnitude of impact is provided.
256. Following a review of projects which have the potential to overlap temporally or spatially with the proposed East Anglia ONE North and East Anglia TWO projects, two developments have been scoped into the CIA.
257. **Table 24.24** provides detail regarding the projects. The full list of projects for consideration has been developed in consultation with the Local Planning Authority. The remainder of the section details the nature of the cumulative impacts against all those receptors scoped in for cumulative assessment.
258. As outlined in **section 24.4.5**, it is not anticipated that the physical footprint of the proposed East Anglia ONE North project works will overlap with any other consented or proposed projects other than the proposed East Anglia TWO project (considered in **section 24.7.1**). Therefore, it is expected that cumulative direct (physical) impacts to unknown buried archaeological remains and above ground archaeological and cultural heritage assets would be predominantly limited to effects of the proposed East Anglia ONE North and East Anglia TWO projects. Nonetheless it is acknowledged that direct physical impact to sub-surface and above ground remains at a landscape scale may occur cumulatively as a result of the groundworks of the proposed East Anglia ONE North and East Anglia TWO projects and those developments screened in for CIA.
259. Indirect (non-physical) impact resulting from change in the setting of heritage assets (both Designated and Non-Designated) may also occur cumulatively as a result of the proposed East Anglia ONE North and East Anglia TWO projects with those developments screened in for CIA.

Table 24.23 Potential Cumulative Impacts

Impact	Potential for Cumulative Impact	Rationale
Construction		
Direct physical impact on buried archaeological remains	Yes	Although the physical footprint of the proposed East Anglia ONE North project works are not anticipated to overlap with any other existing, consented or proposed projects (other than East Anglia TWO, considered above), cumulative direct impacts on buried archaeological remains arising from two or more projects are considered possible on a landscape scale (i.e. impacts to below ground archaeological remains as a result of multiple, large projects within the region).
Direct physical impact on above ground archaeological remains and heritage assets	Yes	Although the physical footprint of the proposed East Anglia ONE North project works are not anticipated to overlap with any other existing, consented or proposed projects (other than East Anglia TWO, considered above), cumulative direct impacts on above ground archaeological remains and heritage assets arising from two or more projects are considered possible on a landscape scale (i.e. impacts to above ground archaeological remains and heritage assets as a result of multiple, large projects within the region).
Indirect (non-physical) Impact resulting from change in the Setting of Heritage Assets	Yes	Cumulative indirect non-physical impacts (resulting from change in 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 or group of heritage assets, although additional (external) factors affecting setting may also occur.
Impact on potential geoarchaeological / palaeoenvironmental remains	No	The physical footprint of the proposed East Anglia ONE North project works are not anticipated to overlap with any other existing, consented or proposed projects (other than East Anglia TWO, considered above). As such, cumulative direct impacts on potential geoarchaeological / palaeoenvironmental remains arising from two or more projects are not considered of material relevance.
Impact to site preservation conditions from drilling fluid breakout or oil spills	No	The physical footprint of the proposed East Anglia ONE North project works are not anticipated to overlap with any other existing, consented or proposed projects (other than East Anglia TWO, considered above). As such, cumulative impacts to site preservation conditions from drilling fluid breakout or oil spills arising from two or more projects are not considered relevant.

Impact	Potential for Cumulative Impact	Rationale
Operation		
Indirect (non-physical) Impact resulting from change in the Setting of Heritage Assets	Yes	Cumulative indirect non-physical impacts (resulting from change in 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 or group of heritage assets, although additional (external) factors affecting setting may also occur.
Impacts to archaeological site preservation conditions, where present, from heat loss from installed cables	No	The physical footprint of the proposed East Anglia ONE North project works are not anticipated to overlap with any other existing, consented or proposed projects (other than East Anglia TWO, considered above). As such, cumulative impacts to site preservation conditions from heat loss from installed cables from two or more projects are not considered relevant.
Decommissioning		
<p>No decision has been made regarding the final decommissioning policy for the onshore infrastructure as it is recognised that industry best practice, rules and legislation change over time. An Onshore Decommissioning Plan will be provided, as secured under the requirements of the draft DCO. The onshore substation will likely be removed and be reused or recycled. It is anticipated that the onshore cable would be decommissioned (de-energised) and either the cables and jointing bays left <i>in situ</i> or removed depending on the requirements of the Onshore Decommissioning Plan approved by the Local Planning Authority. 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. As such, for the purposes of a worst-case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase.</p>		

Table 24.24 Summary of Projects considered for the CIA in Relation to Archaeology and Cultural Heritage

Project Name	Status	Development Period	⁵ Distance from East Anglia ONE North Onshore Development Area	Project Definition	Level of information available	Included in CIA	Rationale
Sizewell C New Nuclear Power Station	PEIR formally submitted 04.01.19.	Planning application expected in 2020. Construction expected to commence in 2021.	1.4km	A new nuclear power station at Sizewell in Suffolk. Located to the north of the existing Sizewell B Power Station Complex, Sizewell C New Nuclear Power Station would have an expected electrical capacity of approximately 3,260 megawatts (MW). Full PEIR available: https://www.edfenergy.com/download-centre?keys=&tid=1380&year%5Bvalue%5D%5Byear%5D=	Tier 5 ⁶	Yes	Potential for cumulative Indirect (non-physical) Impact resulting from change in the Setting of Heritage Assets arising as a result of the proposed East Anglia ONE North and East Anglia TWO projects and the Sizewell C New Nuclear Power Station. Potential also for direct (physical) impacts to below and above ground archaeological remains / heritage assets at a landscape scale.
Sizewell B Power Station Complex	Planning application formally submitted 18.04.19.	Construction expected to commence in 2022. Expected construction	1.4km	The demolition and relocation of facilities at the Sizewell B Power Station Complex. In outline, demolition of various existing buildings (including the outage store, laydown area, operations training centre and technical	Tier 4 ⁷	Yes	Potential for cumulative Indirect (non-physical) Impact resulting from change in the Setting of Heritage Assets arising as a result of the proposed East Anglia

⁵ Shortest distance between the considered project and East Anglia ONE North– unless specified otherwise

⁶ Based on the definition of Tier 5 outlined in **section 5.7.2 of Chapter 5 EIA Methodology**

⁷ Based on the definition of Tier 4 outlined in **section 5.7.2 of Chapter 5 EIA Methodology**

Project Name	Status	Development Period	⁵ Distance from East Anglia ONE North Onshore Development Area	Project Definition	Level of information available	Included in CIA	Rationale
	Awaiting Decision.	timetable of 53 months. Peak construction is expected in 2022, completion of construction expected in 2027.		training facility), and erection of new buildings, including a visitor centre, and the construction of new access road, footpath and amended junction at Sizewell Gap; and associated landscaping and earthworks/recontouring. Full planning application available: https://publicaccess.eastsuffolk.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=PQ5N VGQXJJ100			ONE North and East Anglia TWO projects and the Sizewell B Power Station Complex and Adjoining Land. Potential also for direct (physical) impacts to below and above ground archaeological remains / heritage assets at a landscape scale.

24.7.2.1 Cumulative Impacts during Construction

24.7.2.1.1 Impact 1: Direct Physical Impact on (Permanent Change to) Buried Archaeological Remains and Above Ground Archaeological Remains / Heritage Assets

260. The physical footprint of the proposed East Anglia ONE North project works will not overlap with any other consented or proposed projects other than the proposed East Anglia TWO project. Nonetheless it is acknowledged that direct physical impact to sub-surface archaeological remains and above ground archaeological remains / heritage assets at a landscape scale may occur cumulatively as a result of the groundworks of the proposed East Anglia ONE North and TWO projects and those projects screened in for CIA. Multiple direct physical impacts upon sub-surface and above ground archaeological remains / heritage assets could result in an adverse cumulative impact upon the overall below and above ground archaeological resource of the areas proposed for development. Where multiple direct physical impacts do occur during the construction of multiple projects, then cumulative impacts therefore have the potential to occur. This may result in the loss of certain unique aspects of the sub-surface or above ground archaeological resource. In addition, if a site is damaged or destroyed, comparable sites elsewhere may increase in importance as a result of greater rarity and any future direct physical impacts will potentially be of greater significance. The level of impact is difficult to assign with any certainty but could as a WCS involve heritage assets of high importance, being subject to major adverse magnitude of cumulative impact, resulting in a major adverse cumulative significance of effect (prior to mitigation). However, the scale of the potential impact and resulting effects that may occur, as a result of this set of circumstances, would likely be somewhat offset by the potential beneficial impact outlined below.
261. Due to the acquisition and archaeological assessment of survey data (e.g. geophysical, LiDAR, aerial photographic, trial trenching etc) carried out for various developments in recent years, the information provided by both non-intrusive and intrusive investigatory works on previously unrecorded (sub-surface) heritage assets can be seen as contributing significantly to a greater understanding of the sub-surface historic environment resource. Similarly, information acquired for the purpose of identifying / recording earthworks or other above ground heritage assets (e.g. the archaeological assessment of LIDAR, aerial photographic surveys, field walking, earthwork identification, condition surveys and recording and detailed recording of standing buildings or structures) can be seen as contributing significantly to a greater understanding of the above ground historic environment resource. The acquisition of such data can be considered to enhance public understanding by adding to the archaeological record (e.g. through the accumulation of publicly available information and data).

As such, the data and records produced in mitigating impacts upon such archaeological remains can also be regarded as a significant, beneficial cumulative effect. Any positive effect, however, must be demonstrated by the completion of studies to professional archaeological standards and the results produced must be made publicly available (as set out in the Outline WSI submitted with this DCO application, document reference 8.5).

262. Following the initial informative stages of mitigation work and additional mitigation measures, as well as the other projects (screened in for CIA) expected to be subject to the same level of regulator/curator requirements, and also having a range of mitigation options open and available to them of a similar nature to the proposed East Anglia ONE North and East Anglia TWO projects, (see **section 24.3.3**), it is considered that the resulting residual significance of effect will be **minor adverse**.

24.7.2.1.2 Impact 2: Indirect (non-physical) Impacts resulting from change in the Setting of Heritage Assets

263. Cumulative indirect (non-physical) Impacts resulting from change in Setting have the potential to occur upon heritage assets which have visibility of construction works associated with the proposed East Anglia ONE North and East Anglia TWO projects alongside those undertaken for other projects and activities, where construction works are concurrent. Indirect (non-physical) Impacts resulting from change in the Setting of Heritage Assets, should they occur, may do so through the presence of machinery, construction traffic and general construction activities. The sight, sound, any dust created, and even smell, during the construction phase has the potential to result in this type of impact.
264. There is a potential for concurrent construction works to occur between the proposed East Anglia ONE North and East Anglia TWO projects and the Sizewell C New Nuclear Power Station and Sizewell B Power Station Complex Project.
265. As such, there is the potential for indirect (non-physical) Impact resulting from change in the Setting of Heritage Assets with respect to construction works associated with these projects. Despite this potential, as part of the heritage settings assessment undertaken (see **Appendix 24.3, section 3.8** and **Appendix 24.7**) it has been concluded that any changes in setting due to construction activities would be temporary and of sufficiently short duration that they would not give rise to material harm. Cumulative indirect (non-physical) impacts resulting from change in the Setting of Heritage Assets during the construction phase have therefore been excluded from further consideration (**no impact**).

24.7.2.2 Cumulative Impacts during Operation

24.7.2.2.1 Impact 1: Indirect (non-physical) Impacts resulting from change in the Setting of Heritage Assets

266. Cumulative indirect (non-physical) impacts resulting from change in the setting of heritage assets may occur during the operational phase due to the visibility and presence in the landscape of the above ground proposed East Anglia ONE North and proposed East Anglia TWO projects infrastructure alongside above ground infrastructure arising as a result of other projects or activities.
267. The extent of the proposed East Anglia ONE North and TWO projects that are within the vicinity of the Sizewell C New Nuclear Power Station and the Sizewell B Power Station Complex comprises underground elements that would not lead to more than temporary changes in settings during construction works (discussed in **section 24.7.2.1**). These areas of work (i.e. landfall location and the majority of the onshore cable corridor) have been identified and excluded from further consideration (see **section 24.6.2.1** and **Appendix 24.3**). As such, the presence of both the proposed East Anglia ONE North and East Anglia TWO projects and the proposed Sizewell C New Nuclear Power Station and Sizewell B Power Station Complex would not give rise to cumulative indirect (non-physical) impacts resulting from change in the setting of heritage assets during the operational phase (**no impact**).

24.7.3 Cumulative Impacts during Decommissioning

268. No decision has been made regarding the final decommissioning policy for the onshore infrastructure as it is recognised that industry best practice, rules and legislation change over time. An Onshore Decommissioning Plan will be provided, as secured under the requirements of the draft DCO. The onshore substation will likely be removed and be reused or recycled. It is anticipated that the onshore cable would be decommissioned (de-energised) and either the cables and jointing bays left *in situ* or removed depending on the requirements of the Onshore Decommissioning Plan approved by the Local Planning Authority. 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. As such, for the purposes of a worst-case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase.

24.8 Inter-relationships

269. The inter-relationships that exist between archaeology and cultural heritage and other relevant topics are presented in **Table 24.25**.

Table 24.25 Chapter Topic Inter-Relationships

Inter-relationship all Phases and Linked Chapter	Where addressed in this chapter	Rationale
Chapter 16 Marine Archaeology and Cultural Heritage	Sections 24.5 and 24.6	Indirect (non-physical) impacts resulting from change in the setting of heritage assets (designated and non-designated) and direct impact on deposits of geoarchaeological / palaeoenvironmental interest.
Chapter 25 Noise and Vibration	Sections 24.3.2 and 24.7.	Indirect (non-physical) impacts resulting from change in the setting of heritage assets (designated and non-designated).
Chapter 28 Offshore Seascape, landscape and Visual Amenity	Sections 24.5 and 24.6	Indirect (non-physical) impacts resulting from change in the setting of heritage assets (designated and non-designated).
Chapter 29 Landscape and Visual Impact	Sections 24.5, 24.6 and Appendix 24.3	Indirect (non-physical) impacts resulting from change in the setting of heritage assets (designated and non-designated).

270. Information from these chapters informs a consideration of potential indirect (non-physical) impacts resulting from change in the setting of heritage assets as part of the settings assessment. A review of the assessment and conclusions reached with respect to these topics also serves to identify any further potential impacts upon the historic environment and to help inform the impact assessment presented in this ES.

24.9 Interactions

271. The impacts identified and assessed in this chapter have the potential to interact with each other, which could give rise to synergistic impacts as a result of that interaction. The areas of interaction between impacts are presented in **Table 24.26** along with an indication as to whether the interaction may give rise to synergistic impacts. This provides a screening tool for which impacts have the potential to interact.

272. **Table 24.27** then provides an assessment for each receptor (or receptor group) related to these impacts in two ways. Firstly, the impacts are considered within a development phase (i.e. construction, operation or decommissioning) to see if, for example, multiple construction impacts could combine. Secondly, a lifetime assessment is undertaken which considers the potential for impacts to affect receptors across development phases. The significance of each individual impact is determined by the sensitivity of the receptor and the magnitude of effect; the sensitivity is constant whereas the magnitude may differ. Therefore, when

considering the potential for impacts to be additive it is the magnitude of effect which is important – the magnitudes of the different effects are combined upon the same sensitivity receptor. If minor impact and minor impact were added this would effectively double count the sensitivity.

273. The receptors considered in the archaeology and cultural heritage assessment are:

- Buried archaeology;
- Above ground archaeology; and
- Geoarchaeological / Palaeoenvironmental remains.

Table 24.26 Interaction Between Impacts

Potential Interaction between Impacts					
Construction					
	Impact 1: Direct (physical) impact on buried archaeological remains	Impact 2: Direct (physical) impact on above ground archaeological remains	Impact 3: Indirect (non- physical) Impact resulting from change in the Setting of Heritage Assets	Impact 4: Impact on potential geoarchaeological / palaeoenvironmental remains	Impact 5: Impacts to site preservation conditions from drilling fluid breakout
Impact 1: Direct (physical) impact on buried archaeological remains	-	Yes	No	Yes	Yes
Impact 2: Direct (physical) impact on above ground archaeological remains	Yes	-	Yes	No	No
Impact 3: Indirect (non-physical) Impact resulting from change in the Setting of Heritage Assets	No	Yes	-	No	No
Impact 4: Impact on potential geoarchaeological / palaeoenvironmental remains	Yes	No	No	-	Yes

Potential Interaction between Impacts					
Impact 5: Impacts to site preservation conditions from drilling fluid breakout	Yes	No	No	Yes	-
Operation					
	Impact 1: Indirect (non-physical) Impact resulting from change in the Setting of Heritage Assets		Impact 2: Impacts to site preservation conditions from heat loss from installed cables		
Impact 1: Indirect (non-physical) Impact resulting from change in the Setting of Heritage Assets	-		No		
Impact 2: Impacts to site preservation conditions from heat loss from installed cables	No		-		
Decommissioning stage impacts					
<p>No decision has been made regarding the final decommissioning policy for the onshore infrastructure as it is recognised that industry best practice, rules and legislation change over time. An Onshore Decommissioning Plan will be provided, as secured under the requirements of the draft DCO. The onshore substation will likely be removed and be reused or recycled. It is anticipated that the onshore cable would be decommissioned (de-energised) and either the cables and jointing bays left <i>in situ</i> or removed depending on the requirements of the Onshore Decommissioning Plan approved by the Local Planning Authority. 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. As such, for the purposes of a worst-case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase.</p>					

Table 24.27 Potential Interactions between Impacts on Archaeology and Cultural Heritage

Receptor	Construction	Operational	Decommissioning	Phase Assessment	Lifetime Assessment
Buried archaeology	Minor adverse	No impact	Minor adverse	n/a There is only a single impact (<i>Impact 1 direct physical impact</i>) for the receptor, therefore no potential interactions	No greater than individually assessed impact Infrastructure is only installed during construction, therefore there is no greater footprint taken as part of the operational phase. Given that there are no operational impacts, the time between the construction and decommissioning phases is too great for there to be a pathway of interaction between construction and decommissioning impacts.
Above ground archaeology	Minor adverse	Moderate adverse	Minor adverse	n/a There is only a single impact for the receptor in any phase (<i>Impact 2 direct physical impact</i> during the construction and decommissioning phases, <i>Impact 3 indirect impact</i> during the operational phase), therefore no potential interactions. Setting not relevant to the construction and decommissioning phases. Direct physical impacts are not relevant to the operational stage.	No greater than individually assessed impact Setting not relevant to the construction and decommissioning phases. Direct physical impacts are not relevant to the operational stage.

Receptor	Construction	Operational	Decommissioning	Phase Assessment	Lifetime Assessment
Geoarchaeological / Palaeoenvironmental remains	Minor adverse	No impact	Minor adverse	n/a There is only a single impact (<i>Impact 4 impact on potential geoarchaeological / palaeoenvironmental remains</i>) for the receptor, therefore no potential interactions	No greater than individually assessed impact Infrastructure is only installed during construction, therefore there is no greater footprint taken as part of the operational phase. Given that there are no operational impacts, the time between the construction and decommissioning phases is too great for there to be a pathway of interaction between construction and decommissioning impacts.

24.10 Summary

274. A summary of the findings of this chapter for archaeology and cultural heritage is presented in **Table 24.28**.
275. In accordance with the assessment methodology presented in **section 24.4**, this table should also be used in conjunction with the additional narrative explanations provided in **section 24.6**.
276. The impact assessment as presented in this chapter assumes that activities associated with construction may theoretically occur anywhere within the onshore development area. On this basis, cumulative direct impacts of the proposed East Anglia ONE North project on the archaeological and cultural heritage resource in-combination with the proposed East Anglia TWO project will be broadly in line with those outlined for the proposed East Anglia ONE North project alone (which considers potential impacts within the onshore development area as a whole).
277. A summary of potential cumulative impacts for archaeology and cultural heritage with other projects is included at the end of **Table 24.28**.
278. This chapter has concluded that the predicted residual impacts on the heritage significance of heritage assets as a result of changes to their setting due to the proposed East Anglia ONE North project will range from no impact to a **moderate adverse** significance of effect (the latter in the case of two heritage assets, namely Little Moor Farm and the Church of St. Mary, Friston).
279. With respect to sub-surface and above ground archaeological remains the proposed East Anglia ONE North project has sought opportunities to minimise harm to the archaeological and cultural heritage resource (e.g. by means of onshore development area refinement / onshore cable corridor siting which seek to avoid known heritage assets, where possible within the confines of other environmental and engineering constraints). Following the implementation and completion of the initial informative stages of mitigation work and additional mitigation measures, it is not anticipated that there will be predicted residual impacts on the heritage significance of heritage assets with archaeological interest of greater than a **minor adverse** significance of effect.

Table 24.28 Potential Impacts Identified for Archaeology and Cultural Heritage

Potential Impact	Asset	Heritage Importance (as a WCS)	Magnitude of Impact (as a WCS)	Significance of Effect (as a WCS)	Mitigation Measures	Residual Effect (as a WCS)
Construction						
Impact 1: Direct Physical Impact on (Permanent Change to) Buried Archaeological Remains	Buried Archaeological Remains	A range: ≤ High	A range: ≤ High	Major adverse	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
Impact 2: Direct Physical Impact on (permanent change to) Above Ground Archaeological Remains and Heritage Assets	Above Ground Archaeological Remains and Heritage Assets	A range: ≤ Medium	A range: ≤ Medium	Moderate adverse	Initial informative stages of mitigation work and additional mitigation measures (see section 24.3.3)	Minor adverse
Impact 3: Indirect (non-physical) Impact resulting from change in the Setting of Heritage Assets (both Designated and Non-Designated)	Heritage Assets (both Designated and Non-Designated)	A range: ≤ High	No impact	No impact / no change	n/a	No impact / no change
Impact 4: Impact on potential Geoarchaeological /	Geoarchaeological / Palaeoenvironmental remains	A range: ≤ High	A range: ≤ Medium	Major adverse	Initial informative stages of	Minor adverse

Potential Impact	Asset	Heritage Importance (as a WCS)	Magnitude of Impact (as a WCS)	Significance of Effect (as a WCS)	Mitigation Measures	Residual Effect (as a WCS)
Palaeoenvironmental remains, potentially indicative of former land surfaces					mitigation work and additional mitigation measures (see section 24.3.3)	
Impact 5: Impact to site preservation conditions from drilling fluid breakout or oil spills	Buried Archaeological Remains	≤ High	Negligible	Minor adverse	Action Plan to be included in final CoCP	Negligible
Operation						
Impact 1: Indirect (non-physical) Impact resulting from change in the Setting of Heritage Assets	Heritage Assets (Designated):	A range:				
	Little Moor Farm (Grade II)	Medium	Medium	Moderate Adverse	OLEMS	Moderate Adverse
	High House Farm (Grade II)	Medium	Low	Minor Adverse	OLEMS	Minor Adverse
	Friston House (Grade II)	Medium	Negligible	Minor Adverse	OLEMS	Minor Adverse
	Woodside Farmhouse (Grade II)	Medium	Low	Minor Adverse	OLEMS	Minor Adverse
Church of St Mary (Grade II*)	High	Low	Moderate Adverse	OLEMS	Moderate Adverse	

Potential Impact	Asset	Heritage Importance (as a WCS)	Magnitude of Impact (as a WCS)	Significance of Effect (as a WCS)	Mitigation Measures	Residual Effect (as a WCS)
	Friston War Memorial (Grade II)	Medium	Negligible	Minor Adverse	OLEMS	Minor Adverse
	Friston Post Mill (Grade II*)	High	Negligible	Minor Adverse	n/a	Minor Adverse
	Aldringham Court (Grade II)	Medium	Negligible	Minor Adverse	n/a	Minor Adverse
Impact 2: Impacts to archaeological site preservation conditions, where present, from heat loss from installed cables	Buried Archaeological Remains	A range: ≤ High	No Impact	No impact/change	n/a	No impact/change
Decommissioning						
<p>No decision has been made regarding the final decommissioning policy for the onshore infrastructure as it is recognised that industry best practice, rules and legislation change over time. An Onshore Decommissioning Plan will be provided, as secured under the requirements of the draft DCO. The onshore substation will likely be removed and be reused or recycled. It is anticipated that the onshore cable would be decommissioned (de-energised) and either the cables and jointing bays left <i>in situ</i> or removed depending on the requirements of the Onshore Decommissioning Plan approved by the Local Planning Authority. 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. As such, for the purposes of a worst-case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase.</p>						

Potential Impact	Asset	Heritage Importance (as a WCS)	Magnitude of Impact (as a WCS)	Significance of Effect (as a WCS)	Mitigation Measures	Residual Effect (as a WCS)
Cumulative Construction Impacts with Other Developments						
Impact 1: Direct Physical Impact on (Permanent Change to) Buried Archaeological Remains and Above Ground Archaeological Remains / Heritage Assets	Buried Archaeological Remains and above ground archaeological remains / heritage assets – landscape scale only	≤High	≤High	Major adverse	Initial informative stages of mitigation work and additional mitigation measures, as well as other projects expected to be subject to, and have a range of mitigation options open to them of a similar nature (see section 24.3.3)	Minor adverse
Impact 2: Indirect (non-physical) Impact resulting from (temporary) change in the Setting of Heritage Assets	Heritage Assets (both Designated and Non-Designated)	≤High	No impact	No impact/change	None required	No impact/change
Cumulative Operational Impacts with Other Developments						
Impact 1: Indirect (non-physical) Impact resulting from change in the Setting of Heritage Assets	Heritage Assets (both Designated and Non-Designated)	≤High	No impact	No impact/change	None required	No impact/change

Potential Impact	Asset	Heritage Importance (as a WCS)	Magnitude of Impact (as a WCS)	Significance of Effect (as a WCS)	Mitigation Measures	Residual Effect (as a WCS)
Cumulative Decommissioning Impacts with Other Developments						
<p>No decision has been made regarding the final decommissioning policy for the onshore infrastructure as it is recognised that industry best practice, rules and legislation change over time. An Onshore Decommissioning Plan will be provided, as secured under the requirements of the draft DCO. The onshore substation will likely be removed and be reused or recycled. It is anticipated that the onshore cable would be decommissioned (de-energised) and either the cables and jointing bays left <i>in situ</i> or removed depending on the requirements of the Onshore Decommissioning Plan approved by the Local Planning Authority. 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. As such, for the purposes of a worst-case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase.</p>						

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