East Anglia ONE North Offshore Windfarm

Chapter 24

Archaeology and Cultural Heritage

Preliminary Environmental Information
Volume 1
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Glossary of Acronyms

AAA	Areas of Archaeological Activity
ADS	Archaeological Data Service
ADBA	Archaeological 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
DCLG	Department for Communities and Local Government
DCO	Development Consent Order
DECC	Department of Energy and Climate Change
DMRB	Design Manual for Roads and Bridges
EIA	Environmental Impact Assessment
ES	Environmental Statement
ETG	Expert Topic Group
GI	Ground Investigation
GPA	Good Practice Advice
HDD	Horizontal Directional Drilling
HE	Historic England
HER	Historic Environment Record
HLC	Historic Landscape Characterisation
HSG	Heritage Steering Group
IODA	Indicative Onshore Development Area
IPC	Infrastructure Planning Commission
ISA	Inner Study Area
LiDAR	Light Detection and Ranging
LPA	Local Planning Authority
LVIA	Landscape and Visual Impact Assessment
MHCLG	Ministry of Housing, Communities and Local Government
MHWS	Mean High Water Springs
NDHA	Non-Designated Heritage Assets
NMP	National Mapping Programme
NPPF	National Planning Policy Framework
NPS	National Policy Statements
NRHE	National Record for the Historic Environment
NSIP	Nationally Significant Infrastructure Project
OHL	Overhead Line
ORPAD	Offshore Renewables Protocol for Archaeological Discoveries

OS	Ordnance Survey
OSA	Outer Study Area
PAD	Protocol for Archaeological Discoveries
PAS	Portable Antiquities Scheme
PEI	Preliminary Environmental Information
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.
Construction consolidation sites	Compounds which will contain laydown, storage and work areas for onshore construction works. The HDD construction compound will also be referred to as a construction consolidation site.
Development area	The area comprising the Proposed onshore development Area and the Offshore Development Area
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.
European site	Sites designated for nature conservation under the Habitats Directive and Birds Directive, as defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017 and regulation 18 of the Conservation of Offshore Marine Habitats and Species Regulations 2017. These include candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and Special Protection Areas.
Evidence Plan Process	A voluntary consultation process with specialist stakeholders to agree the approach to the EIA and the information required to support HRA.
Horizontal directional drilling (HDD)	A method of cable installation where the cable is drilled beneath a feature without the need for trenching.
Jointing bay	Underground structures constructed at regular 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 or above ground cabinets next to the cable trench housing electrical earthing links.
Mitigation areas	Areas captured within the Development Area specifically for mitigating expected or anticipated impacts.
National Grid infrastructure	A National Grid substation, connection to the existing electricity pylons and National Grid overhead line realignment works 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 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 and two fibre optic cables.
Proposed onshore development area	The area in which the landfall, onshore cable corridor, onshore substation, 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 substation	The East Anglia ONE North substation and all of the electrical equipment within it.
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 Preliminary Environmental Information Report (PEIR) summarises the existing baseline conditions for the onshore archaeological and cultural heritage environment (the historic environment) within the proposed onshore development area of the proposed East Anglia ONE North project. It also assesses the potential impacts upon the onshore historic environment, 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 PEIR chapter has been prepared in line with the Method Statement previously produced for onshore archaeology and cultural heritage (Royal HaskoningDHV 2018a) and consulted on with Historic England (HE), 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***). The Method Statement was produced for discussion and agreement within the ETG process and is superseded by the methodology presented in this PEIR chapter following consultation and comments received (see ***Table 24.1***). The impact assessment methodology (as outlined in the Method Statement) rests on the notion that, although the matrix-based approach has been maintained and utilised as part of a standardised approach to the wider EIA, the conclusions reached within this PEIR chapter are qualified through a robust, reasoned and descriptive analysis (e.g. a narrative) and underpinned by professional judgement as part of a more qualitative approach, wherever possible. The ETG for onshore archaeology and cultural heritage are now collectively referred to as the Heritage Steering Group (HSG) for the purposes of the proposed East Anglia ONE North project.

3. This PEIR chapter draws heavily upon its accompanying primary supporting technical report, the Archaeological and Cultural Heritage Desk Based Assessment (ADBA) produced by Headland Archaeology (***Appendix 24.1***). The chapter has been streamlined as far as possible (primarily to aid its readability), within the context of Environmental Impact Assessment (EIA), with more detailed technical information available within ***Appendix 24.1*** and other related appendices (***Appendices 24.2*** and ***24.3***). The ADBA was prepared in line with a Written Scheme of Investigation (WSI) (Royal HaskoningDHV 2018b), establishing 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***).

4. The baseline conditions as set out in this PEIR chapter have been established within defined study areas based on a proposed onshore development area (***Figure 24.1***). Baseline conditions are, to date, based primarily on the results of a full and comprehensive ADBA (***Appendix 24.1***). 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 proposed 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, an aerial photographic and Light Detection and Ranging (LiDAR) data assessment, an initial heritage settings assessment, and a field reconnaissance survey (comprising site walkovers and specific site visits). Historic map resources were also subject to scrutiny. Baseline conditions set out in this PEIR chapter are also informed by the preliminary archaeological assessment of geophysical survey results (***Appendix 24.2***), where data has been acquired to date within the proposed onshore development area.

5. Heritage assets within the proposed onshore development area that are considered to potentially represent surviving below ground archaeological remains have not as yet been fully evaluated through non-intrusive (e.g. geophysical survey) or by intrusive (e.g. trial trenching) evaluation approaches. The baseline conditions set out in the ADBA thereby form a primary information source for potential below ground remains at this stage, which is based on potential, supplemented by non-intrusive geophysical survey data (where available – see below) rather than any firm, substantiated and established levels of heritage importance, for this PEIR chapter.

6. The programme of onshore 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 the proposed onshore development area (see ***section 24.4.2.1*** for further information regarding progress to date). A preliminary report, summarising broad Areas of Archaeological Activity (AAAs) identified within survey data acquired to date (***Appendix 24.2***), informs this chapter, although interpretations therein are regarded as preliminary until all the outstanding areas have been surveyed. The initial results and findings have nonetheless been incorporated within this chapter, where available and relevant.

7. The geophysical survey data acquired to date has helped inform an understanding of the sub-surface archaeological potential of the proposed onshore development area. Preliminary results have also informed discussions regarding project design, particularly in regard to siting and onshore cable routeing considerations. The archaeological assessment of geophysical survey data will ultimately serve to inform and contribute to appropriate intrusive evaluation and subsequent mitigation strategies in relation to the below ground archaeological and cultural heritage resource. The results of the onshore geophysical survey will be more fully reported on as part of the Environmental Statement (ES) chapter to be submitted with the Development Consent order (DCO) application.

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) impacts perspective, and includes specific attention with respect to heritage setting and heritage significance (see ***sections 24.5*** and ***24.6*** and ***Appendix 24.1*** for further detail).

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 assessment methodology utilised in the onshore and offshore and intertidal archaeological and cultural heritage chapters has been ensured, where relevant, in order to produce an integrated and coherent account of the historic environment and the degree to which the 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 24.7.2.1***). 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.***

11. This chapter has been prepared by Royal HaskoningDHV in consultation with the HSG (***section 24.2***) and in accordance with legislation, policy and industry standards and guidance documents relevant to the onshore archaeological and

cultural heritage (historic) environment (***section 24.4.1***), with specific reference to the relevant National Policy Statements (NPSs), the National Planning Policy Framework (NPPF) and associated Planning Practice Guidance (PPG).

24.2 Consultation

12. Consultation is a key driver of the Environmental Impact Assessment (EIA) process, and continues throughout the lifecycle of a project, from its initial stages through to consent and post-consent.

13. To date, consultation with regards to archaeology and cultural heritage has been undertaken via Expert Topic Group (ETG), described within ***Chapter 5 EIA Methodology,*** with meetings held in June 2018, and through the East Anglia ONE North Scoping Report (ScottishPower Renewables (SPR) 2017). Feedback received through this process has been considered in preparing the PEIR where appropriate and this chapter will be updated following the next stage of consultation for the final assessment submitted with the Development Consent Order (DCO) application.

14. ***Table 24.1*** provides a summary of those consultation responses that have been received as a response to the Scoping Report (SPR 2017) and are relevant to archaeology and cultural heritage. Responses from stakeholders have been captured in the table below.

Table 24.1 Consultation Responses

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
Suffolk County Council and Suffolk Coastal District Council	08/12/2017 Scoping Response	Archaeological and heritage assessments and mitigation phases must be programmed into the proposed East Anglia ONE North project at the earliest opportunity, with sufficient time allowed to enable fieldwork to be completed prior to the start of construction works, so as to avoid any delays to the development schedule. We would strongly advise that a dedicated archaeological consultant is appointed to the proposed East Anglia ONE North project at this stage in project planning to try to ensure the smooth delivery of the archaeological requirements for the proposed East Anglia ONE North project alongside other elements of the scheme.	Noted. Royal HaskoningDHV are currently providing consultancy support to SPR. Headland Archaeology have been appointed by SPR to undertake a detailed ADBA (***Appendix 24.1***); and Geophysical Survey (***Appendix 24.2***). The results of the ADBA and preliminary results of the Geophysical Survey are discussed in ***section 24.5***.
Suffolk County Council and Suffolk Coastal District Council	08/12/2017 Scoping Response	A settings impact assessment for above ground heritage assets should be undertaken and the impact of the proposals upon historic hedgerows, boundaries and other historic landscape	Noted. These form part of the scope of the detailed ADBA undertaken by

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
		elements should also be considered through the use of historic mapping and Historic Landscape Characterisation data.	Headland Archaeology (***Appendix 24.1***). The settings impact assessment process is discussed in ***section 24.5.3.3***.
Suffolk County Council and Suffolk Coastal District Council	08/12/2017 Scoping Response	SCCAS would advise that all areas which will be impacted upon by the different elements of the EA2 scheme, or which form possible option sites, should be subject to archaeological field assessment at this stage in considering the location, layout and design of the substation location and onshore cable route, to allow for preservation *in situ* where appropriate of any sites of importance that might be defined (and which are currently unknown) and to provide information to contribute to the site selection process.	Geophysical survey data will be scrutinised in order that archaeological information can be fed directly into the ongoing route refinement and siting considerations for the proposed East Anglia ONE North project, narrowing down the proposed onshore development area to preferred onshore cable route.
Suffolk County Council and Suffolk Coastal District Council	08/12/2017 Scoping Response	The Scoping Report currently refers to trenching of the sub-station site, however, we would advise that all sites which will be impacted on by any element of the construction phase should be subject to trial trenching. Undertaking full archaeological evaluation will enable the results of the surveys to be used to assist with project programming and also to contribute to risk management. Evaluation at this stage will test the suitability of sites for development, given the reduced flexibility for mitigation through design once a sub-station location and cable route have been selected.	The Applicant will not be undertaking pre-consent archaeological trial trenching.
Suffolk County Council and Suffolk Coastal District Council	08/12/2017 Scoping Response	Greater clarity should be given as to the nature, timing and extent of the evaluation work to be undertaken for this project. At present only trenching of the substation site is mentioned, without reference to evaluation of the other elements of the scheme such as the cable routes and other associated infrastructure.	The Applicant will not be undertaking pre-consent archaeological trial trenching.
Suffolk County Council and Suffolk Coastal District Council	08/12/2017 Scoping Response	SCDC as local planning authority have responsibility in relation to Grade II listed buildings so should be involved in consultation in relation to mitigation if listed buildings are involved.	Noted.
Suffolk County Council and	08/12/2017	From an archaeological point view, we would fully support the possibility of	Noted. The co-locating of the National Grid

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
Suffolk Coastal District Council	Scoping Response	locating substations from different schemes together on a single site in order to reduce the overall impact on both above and below ground archaeology and the historic landscape as a whole. Again, there is potential to link up with sites which have already been developed for similar uses, but also if there was a possibility to utilise previously developed and therefore disturbed land, this is likely to reduce below ground archaeological impacts.	substation and the East Anglia ONE North onshore substation was preferential during the site selection process.
Suffolk Preservation Society	15/12/2017 Scoping Response	We note SPR proposals for assessing impact on designated and non-designated Heritage Assets. As noted previously by the Examining Authority for the sister project East Anglia Offshore Windfarm THREE there was uncertainty and concern with the adequacy of the assessment approach and methodology for heritage asset impact. We trust that the assessment of heritage assets and their setting within the study area for East Anglia ONE North and the related onshore connections which will be in accordance with Historic England's adopted guidance Good Practice Advice (GPA) 3: The Setting of Heritage Assets.	Detailed consideration of heritage assets and their setting has been undertaken in accordance with GPA 3, initially as part of the ADBA undertaken by Headland Archaeology (***Appendix 24.1***). The results of the ADBA are discussed in ***section 24.5***.
Historic England	08/12/2017 Scoping Response	A number of important listed buildings lie just outside the study area shown in the Scoping Report. These buildings, in particular a group of buildings at Thorpeness (including the House in the Clouds), St Andrews Church (nr Aldringham), Billeaford Hall, a group of buildings at Friston, and those in the southern part of Leiston need to be brought in to the initial study, even if these are scoped out following analysis. We also would like the study to consider the higher grade buildings in Leiston (such as the Grade II* Longshop) even if these are likewise scoped out later. Important designated heritage assets also need to be included in the list of sites to be included in the Landscape and Visual Amenity study, and the heritage viewpoints will need to be discussed and agreed prior to the PEI stage, with ourselves and the Local Planning Authority (LPA).	Noted. Detailed consideration of Listed Buildings and their settings has been undertaken, initially as part of the ADBA undertaken by Headland Archaeology (***Appendix 24.1***). The results of the ADBA are discussed in ***section 24.5***.
Historic	08/12/2017	If the larger turbines are being considered then a corresponding study will need to be	Noted.

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
England	Scoping Response	undertaken that demonstrates the likely impact of these turbines on designated coastal heritage assets. The study area and numbers of heritage assets would ideally be considered at the scoping stage.	It is currently anticipated that this element (work stream) will be added to Headland Archaeology's scope between PEIR and ES, and reported on as part of the ES. Coastal views and visibility have already started to be considered by the Landscape and Visual Impact Assessment (LVIA) Consultant, and certain heritage related viewpoints established, e.g. from Southwold, Aldeburgh and Orford Castle.
Historic England	08/12/2017 Scoping Response	We have a specific concern in relation to cumulative impact. In our view more also needs to be done to specifically identify the present and planned offshore arrays and numbers of turbines and include these in the cumulative impact study.	Marine Archaeology and Cultural Heritage Chapter related (see ***Chapter 16 Marine Archaeology and Cultural Heritage***).
Historic England	08/12/2017 Scoping Response	In terms of baseline studies, we would recommend that the most appropriate geophysical techniques are utilised, which in some cases may result in more than one geophysical technique being applied to a given area. This would maximise the chances of identifying any archaeological features, and hopefully minimise the risk of any unexpected finds.	Noted. Detailed magnetometry is being employed as standard across the proposed onshore development area. Depending upon the results and comment on the suitability of the technique across the differing geologies, alternative techniques may be considered at a later stage.
Historic England	08/12/2017 Scoping Response	More is needed to show how cultural heritage investigations can be incorporated and planned for adequately. In doing so this will enable to demonstrate clearly the steps and timescales proposed to enable the WSI to function effectively, directing the proposed East Anglia ONE North project in view of other matters through to remaining post-consent delivery.	Noted. A staged approach to assessment, survey and investigation has commenced with detail ADBA, walkovers / site visits and archaeological geophysical survey (July / August /

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
			September 2018). An Outline WSI is proposed to be produced, as one of the DCO documents (outside of the ES chapter), which will secure commitments to undertaking initial informative stages (and subsequent further stages) of mitigation, post-consent.
Historic England	08/12/2017 Scoping Response	An agreed WSI will set out when, how and why (additional) archaeological mitigation measures recommended in the PEI are to be implemented through detailed and direct scheme specific method statements. The delivery of such mitigation measures, through method statements, should therefore be addressed in regard to archaeological objectives with attention on the time and scale of completing and reporting on relevant individual schemes of investigation. In doing so this will enable survey opportunities to be maximised and appropriate information made available to inform the design process. Furthermore, the WSI should include a strategy for monitoring the effects over all phases of the development.	Noted. A staged approach to assessment, survey and investigation has commenced with detail ADBA, walkovers / site visits and archaeological geophysical survey (July / August / September 2018). An Outline WSI is proposed to be produced, as one of the DCO documents (outside of the ES chapter), which will secure commitments to undertaking initial informative stages (and subsequent further stages) of mitigation, post-consent. Post-consent documentation will include both further survey-specific WSIs; and mitigation (pre-construction and construction related) WSIs to be agreed with SCCAS and other HSG representatives, where appropriate.
Historic England	08/12/2017 Scoping Response	The PEI will need to address the potential onshore and inter-tidal zone impact on Cultural Heritage and Archaeology including direct and indirect (i.e. setting)	Noted. Note: Inter-tidal impacts will be addressed under the Marine Archaeology

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
		impacts on designated heritage assets and direct impacts on above-ground and buried undesignated heritage assets.	and Cultural Heritage Chapter (see ***Chapter 16 Marine Archaeology and Cultural Heritage***).
The Planning Inspectorate	20/12/2017 Scoping Response	The Scoping Report sets out that there are five Scheduled Monuments up to 2km from the onshore study area. Further differing buffers are noted for Grade II* and Grade II buildings, Registered Battlefields and Registered Parks and Gardens. The onshore study area used to inform the assessment in the ES should be fully justified and should be established based on the extent of the likely impacts.	Noted. Subsequent agreement during the first ETG Meeting (26th April 2018) was recorded in the Evidence Plan Agreement Log as: "*ETG agrees with study area proposed in Archaeology and Cultural Heritage Method Statement following expansion to include wider cultural heritage settings considerations and to include landscape and heritage specific viewpoints of substation*." The onshore study area(s) have been further established as part of the WSI for DBA and subsequent ADBA undertaken by Headland Archaeology (see ***Appendix 24.1***). The results of the ADBA are discussed in ***section 24.5***.
The Planning Inspectorate	20/12/2017 Scoping Response	The Scoping Report notes in this aspect chapter that effects during decommissioning have the potential to be greater than construction. This conclusion is not intrinsically linked to archaeology and cultural heritage and therefore the Applicant is required to ensure that such conclusions are consistent throughout the PEI. For example, increased 'grubbing out', which is identified in this chapter, is not referred to in other aspect chapters such as Air Quality.	This is based on previous discussion with / feedback from Historic England on similar schemes, in direct reference to sub-surface archaeological remains, and not wider (other) aspect chapters as we understand it.
The Planning Inspectorate	20/12/2017 Scoping	The Scoping Report sets out the mitigation that is to be considered however it is not set out as to when this	Noted. A staged approach to assessment, survey

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
	Response	will be considered. The PEI should clearly set out any mitigation required and this should be agreed with relevant statutory consultees and secured in the DCO.	and investigation has commenced with detail ADBA, walkovers / site visits and archaeological geophysical survey (July / August / September 2018). An Outline WSI is proposed to be produced, as one of the DCO documents (outside of the ES chapter), which will secure commitments to undertaking initial informative stages (and subsequent further stages) of mitigation, post-consent. Post-consent documentation will include both further survey-specific WSIs; and mitigation (pre-construction and construction related) WSIs to be agreed with SCCAS and other HSG representatives, where appropriate.
Suffolk Coastal District Council: Design and Conservation Manager	20/04/2018 Method Statement Response	Para. 33: SCDC's remit extends to all listed buildings and not just those that are Grade II. Therefore, to exclude SCDC in favour of Historic England in respect of Grade I and Grade II* listed buildings, as proposed here, is wrong. Further, we have our own Landscape Manager (Nicholas Newton) who is very capable of commenting on Historic Landscape considerations and should be included (and not excluded in favour of SCC, as suggested here). SCDC should be part of the HSG. (See also para. 82.).	Noted. This has been updated and reflected in the WSI for DBA (Royal HaskoningDHV, 2018b) and the ADBA itself (***Appendix 24.1***). The results of the ADBA are discussed in ***section 24.5***.
Suffolk Coastal District Council: Design and Conservation Manager	20/04/2018 Method Statement Response	Para. 34 – Table 4.1 Data Sources – ditto this table of data sources where we are identified as providing data in respect of Grade II listed buildings only – again, we do so for Grade I, II* and II listed buildings. We can also supply data on identified Non Designated Heritage Assets that are buildings or structures in addition	Noted. This has been updated and reflected in the WSI for DBA (Royal HaskoningDHV 2018b) and the ADBA itself (***Appendix 24.1***). The results of the ADBA are discussed in

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
		to the criteria that can be used by the DBA for identifying new ones within the affected area (to ensure a measure of consistency). Locally listed parklands should also be taken into account (although none may be affected).	***section 24.5***.
Suffolk Coastal District Council: Design and Conservation Manager	20/04/2018 Method Statement Response	Section 4.1.1.2 There is a Protected Wreck off the shore of Dunwich but I assume that this is outside the affected area – onshore anyway but may need to be considered offshore.	Noted. Note: Inter-tidal impacts will be addressed under the Marine Archaeology and Cultural Heritage Chapter (see ***Chapter 16 Marine Archaeology and Cultural Heritage***).
Suffolk Coastal District Council: Design and Conservation Manager	20/04/2018 Method Statement Response	Para. 42 – why are the listed buildings not listed and summarised here, also? It would have been useful to know which ones had already been identified, as has happened with Scheduled Monuments.	Noted. Listed buildings are identified as part of the detailed ADBA (***Appendix 24.1***). The results of the ADBA are discussed in ***section 24.5***.
Suffolk Coastal District Council: Design and Conservation Manager	20/04/2018 Method Statement Response	Section 4.1.1.3 – this section on Non Designated Heritage Assets (NDHA) has a strong archaeological focus and appears to make no allowance for the likelihood of NDHAs that are buildings or structures, which are not yet identified, being affected. NDHAs can also be landscapes, ancient woodland and other areas and places and allowance must be made for the scope for these as NDHAs to be identified.	Noted. This has been updated and reflected in the WSI for DBA (Royal HaskoningDHV 2018b) and the ADBA itself (***Appendix 24.1***). The results of the ADBA are discussed in ***section 24.5***.
Suffolk Coastal District Council: Design and Conservation Manager	20/04/2018 Method Statement Response	This section, as I say, is very archaeology-focussed. The assumption is that the historic landscape will be picked up as some kind of separate LVIA type exercise but it should be incorporated here.	Noted. This has been updated and reflected in the WSI for DBA (Royal HaskoningDHV 2018b) and the ADBA itself (***Appendix 24.1***). The results of the ADBA are discussed in ***section 24.5***.
Suffolk Coastal District Council: Design and Conservation Manager	20/04/2018 Method Statement Response	Section 4.2 Planned data collection – again this section has a heavy archaeology focus. I would expect the survey work tabulated here to include that needed to identify designated and non designated heritage assets; an assessment of their significance; identification of their setting; and an assessment of how the setting contributes	Noted. This has been updated and reflected in the WSI for DBA (Royal HaskoningDHV 2018b) and the ADBA itself (***Appendix 24.1***). Detailed consideration of heritage assets and

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
		to the assets' significance. This survey work would be through DBA or field identification of these assets, historic map regression, site visits, documentary photographs, all leading to the production of a Heritage Asset Assessment. I can't understand why this is omitted here but it should certainly be within this scope of work.	their setting has been undertaken in accordance with GPA 3, initially as part of the ADBA undertaken by Headland Archaeology (***Appendix 24.1***). The results of the ADBA are discussed in ***section 24.5***.
Suffolk Coastal District Council: Design and Conservation Manager	20/04/2018 Method Statement Response	Para. 73 – obviously, the new NPPF and NPPG are in draft form but these should be referred to here.	Noted. The revised NPPF has now been published (24th July 2018) via the MHCLG. The new NPPF and NPPG are referred to in this chapter and ***Appendix 24.1***. The results of the ADBA are discussed in ***section 24.5***.
Suffolk Coastal District Council: Design and Conservation Manager	20/04/2018 Method Statement Response	Para. 75 – I dislike the standardised matrix approach to impact assessment, as proposed here, and I believe that Historic England does, also (confirmed by Will Fletcher). It is a pseudo-scientific approach imported from EIAs and LVIAs and should not be directly applied for use in relation to heritage assets that are buildings or structures, in my view. No Heritage Asset Assessments and Impact Assessments that I regularly read ever use such an approach and it should not be employed here for the asset types with which I am familiar. However, I don't expect this advice to be taken.	Noted. Although the matrices will be maintained and utilised as part of a standardised approach to the wider EIA. The archaeology and cultural heritage chapter, and specifically associated appendices, will be underpinned by professional judgment, as part of a more qualitative approach, with a robust and reasoned narrative, wherever possible. Subsequent agreement during the first ETG Meeting (26th April 2018) was recorded in the Evidence Plan Agreement Log as: "*ETG agrees with assessment methodology proposed in Archaeology and Cultural Heritage Method Statement (given the lack of an*

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
			industry standard approach to heritage assessment within the framework of EIA), but with the following recommendations: *- conservation areas to be of high importance as a matter of course.* *- scoping in of operational impact of cable routeing (if western substation zone is chosen) re. potential tree removal and the setting of the Grade II Listed Raidsend.*"
Suffolk Coastal District Council: Design and Conservation Manager	20/04/2018 Method Statement Response	Table 5.1 is a case in point: conservation areas are a statutory designation and yet some to be are classified here as being of 'medium importance' in terms of their 'heritage significance'. Who decides which conservation areas have 'very important buildings'? What are they? How many are needed to be a conservation area of 'high' importance rather than 'medium'. I find this tabular categorisation specious.	Noted. Conservation areas are to be considered to be of high importance as a matter of course.
Suffolk Coastal District Council: Design and Conservation Manager	20/04/2018 Method Statement Response	Table 5.2 – more tabular categorisation. I suggest that the tests that are applied are those that are contained within the enabling legislation and the NPPF, backed up by case law.	Noted. Agreed. EN-1: Overarching NPS for Energy will come to the fore here, as will EN-3: NPS for Renewable Energy Infrastructure and EN-5: NPS for Electricity Networks Infrastructure. NPPF will also be of relevance.
Suffolk Coastal District Council: Design and Conservation Manager	20/04/2018 Method Statement Response	Table 5.3 – see above. The text refers to the use of professional judgment in arriving at qualitative views and this is welcome.	Noted.
Suffolk Preservation Society	24/04/2018 Method Statement	In terms of the desk-based assessment and non-designated heritage assets, the draft Method Statement (as far as I can	Noted. This has been updated and reflected in the WSI for DBA

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
	Response	see) currently refers only to below-ground heritage assets. This also needs to include an assessment of undesignated built heritage assets, e.g. the potential for the identification of further buildings that are worthy of Listing or Local Listing (does the LPA have a local List for this area?).	(Royal HaskoningDHV 2018b) and addressed in the ADBA itself (***Appendix 24.1***). The results of the ADBA are discussed in ***section 24.5***.
Suffolk Preservation Society	24/04/2018 Method Statement Response	In terms of the proposed Archaeology surveys, this is pretty comprehensive. However, in terms of best practice, the archaeological fieldwalking and metal-detecting for both the substation and cable routes should be undertaken in advance of consent. Certainly, and at the very least, any potentially significant archaeological sites on the cable route that are identified in the DBA and geophysical survey (and by other non-intrusive surveys) should be trial-trenched in advance of consent.	With respect to baseline, the subsequent agreement during the first ETG Meeting (26th April 2018) was recorded in the Evidence Plan Agreement Log as: "*ETG agrees with baseline proposed in Archaeology and Cultural Heritage Method Statement but with the following recommendations:* *- archaeological DBA should be informed by aerial photographic, LiDAR, topographic and geological data.* *- metal detecting and field-walking to be included in pre-consent survey programme (requirement to be reviewed after ADBA).* *- above ground heritage assets assessment to be included within ADBA walkover, and to consider landscape designations, as well as earthworks and field boundaries (including county and parish boundaries).* *- trial trenching of cable route (pinch points as a minimum) to be further considered pre-consent and substation to be included pre-consent.* *- initial stages of*

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
			earthwork condition survey to be undertaken as part of ADBA walkover." The Applicant will not be undertaking pre-consent archaeological trial trenching.
Suffolk Preservation Society	24/04/2018 Method Statement Response	The earthwork condition survey must be undertaken pre-consent and also prior to trial-trenching.	As above: "*Initial stages of earthwork condition survey to be undertaken as part of ADBA walkover*." The Applicant will not be undertaking pre-consent archaeological trial trenching.
Suffolk Preservation Society	24/04/2018 Method Statement Response	Preservation *in situ* (p.19). This must not be left until the construction stage. Archaeological sites of significance requiring preservation *in situ*, and avoidance by the scheme, must be identified pre-consent.	This was in reference to the implementation of 'Preservation *in situ* requirements' at construction. The identification of the need / requirement in respect of specific anomalies / features / sites would be identified in both pre- and post consent survey work.
Suffolk Preservation Society	24/04/2018 Method Statement Response	Strip, map and record excavations should be undertaken pre-construction to avoid delays to the construction schedule and potential comprises to the archaeological mitigation scheme.	Strip Map and Record (SMR) excavation, also known as Strip, Map and Sample (SMS) excavation, may be undertaken during the broader construction window, but as bespoke pieces of archaeological led and programmed works, prior to construction activity following on after upon satisfactory completion of any such works.
Suffolk Preservation Society	24/04/2018 Method Statement	There needs to be discussion and agreement of funding for display, promotion and management of	Data gathering exercises undertaken for the purpose of the

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
	Response	archaeological discoveries on the proposed East Anglia ONE North project, including enhancement of the HER, and also enhancement of the historic environment. The work will help to offset the harm that is likely to be caused by the proposed East Anglia ONE North project to the historic environment and provide a lasting legacy.	project will enhance public understanding by adding to the archaeological record (e.g. through the accumulation of publicly available data). For example, previously unrecorded sites / features identified as a result of survey / evaluation works undertaken for the project will be added to the HER. The outline WSI will also include a commitment for the completion of studies to professional archaeological standards, the results of which must be made publicly available. Further opportunities for the display, promotion and management of archaeological discoveries will be discussed between SPR, their advisors and the HSG as the project progresses.
Expert Topic Group (HSG)	26/04/2018 ETG Meeting Minutes	Discussion particularly focused on the potential impact to the heritage setting of the Listed Building (Aldringham Court Nursing Home - Raidsend) at the Aldeburgh Road woodland crossing point. ETG recommends that more work be done to better understand the potential impact of woodland removal at that location and what is possible from re-planting mitigation in order to be able to support a substation location west of Aldeburgh Road.	Further work in this regard has so far consisted of: - Detailed consideration of heritage assets and their setting undertaken initially as part of the ADBA undertaken by Headland Archaeology (***Appendix 24.1***). The results of the ADBA are discussed in ***section 24.5***.
Expert Topic Group (HSG)	26/04/2018 ETG Meeting Minutes	Heritage setting impacts of the substation should be considered closely with the LVIA particularly ensuring viewpoints can be utilised in both heritage and LVIA assessments. With heritage specific	Noted. Detailed consideration of heritage assets and their setting has been

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
		viewpoints to also be identified.	undertaken in accordance with GPA 3, initially as part of the ADBA undertaken by Headland Archaeology (***Appendix 24.1***). Discussion and tie-in has been made with the LVIA consultants for and on the proposed East Anglia ONE North project (see ***Appendix 24.1*** and ***sections 24.5.2.3, 24.5.3.3*** and ***24.6*** of this PEIR chapter).
Expert Topic Group (HSG)	26/04/2018 ETG Meeting Minutes	ETG recommends that aerial photographic, LiDAR, topographic and geological data is used to inform the forthcoming Archaeological DBA.	Noted. This has been updated and reflected in the WSI for DBA (Royal HaskoningDHV, 2018b) and the ADBA itself (***Appendix 24.1***). The results of the ADBA are discussed in ***section 24.5***.
Expert Topic Group (HSG)	26/04/2018 ETG Meeting Minutes	Data with respect to locally listed buildings, parklands and conservation areas should be requested from SCDC.	Noted. This has been updated and reflected in the WSI for DBA (Royal HaskoningDHV, 2018b) and the ADBA itself (***Appendix 24.1***). The results of the ADBA are discussed in ***section 24.5***.
Expert Topic Group (HSG)	26/04/2018 ETG Meeting Minutes	ETG recommends that historic landscape should be recognised as within the methodology and scoped in for the allowance of the likelihood of NDHAs which are not yet identified, or being affected. Methodology for the production of the Heritage Asset Assessment should be clarified post-ETG meeting and included within the ADBA and survey work.	Noted. This has been updated and reflected in the WSI for DBA (Royal HaskoningDHV, 2018b) and the ADBA itself (***Appendix 24.1***). The results of the ADBA are discussed in ***section 24.5***.
Expert Topic Group (HSG)	26/04/2018 ETG Meeting Minutes	Historic map regression should also include, where available, tithe and enclosure maps held at the Suffolk Record Office.	Noted. This has been updated and reflected in the WSI for DBA (Royal HaskoningDHV, 2018b) and the ADBA itself (***Appendix 24.1***). The results of the

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
			ADBA are discussed in ***section 24.5***.
Expert Topic Group (HSG)	26/04/2018 ETG Meeting Minutes	ETG recommends as a minimum the targeting of metal detecting and field-walking surveys. ETG recommends metal detecting and field-walking to be undertaken pre-consent, but agrees that this can be reviewed after the ADBA has been undertaken and the results discussed in further consultation with them.	Noted. The subsequent agreement during the first ETG Meeting (26th April 2018) was recorded in the Evidence Plan Agreement Log as: "…. *- metal detecting and field-walking to be included in pre-consent survey programme (requirement to be reviewed after ADBA)."*
Expert Topic Group (HSG)	26/04/2018 ETG Meeting Minutes	ETG recommends that an above ground heritage assets assessment is included within the walkover associated with the ADBA, and that this also considers landscape designations, as well as identification and initial assessment of any earthworks and field (including county and parish) boundaries.	Noted. This has been updated and reflected in the WSI for DBA (Royal HaskoningDHV, 2018b) and the ADBA itself (***Appendix 24.1***). The results of the ADBA are discussed in ***section 24.5***. The subsequent agreement during the first ETG Meeting (26th April 2018) was recorded in the Evidence Plan Agreement Log as: "…. *- archaeological DBA should be informed by aerial photographic, LiDAR, topographic and geological data.* *- above ground heritage assets assessment to be included within ADBA walkover, and to consider landscape designations, as well as earthworks and field boundaries (including county and parish boundaries).*

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
			- initial stages of earthwork condition survey to be undertaken as part of ADBA walkover."
Expert Topic Group (HSG)	26/04/2018 ETG Meeting Minutes	ETG recommends that the trial trenching is undertaken along the cable route and the construction compounds pre-consent or as a minimum at key pinch points along the cable route.	The Applicant's will not be undertaking pre-consent archaeological trial trenching.
Expert Topic Group (HSG)	26/04/2018 ETG Meeting Minutes	ETG recommends that as a minimum the initial stages of the earthwork condition survey is undertaken within and as part of the walkover study. This can be drawn out and agreed within the forthcoming WSI for DBA.	Noted. This has been updated and reflected in the WSI for DBA (Royal HaskoningDHV 2018b) and the ADBA itself (***Appendix 24.1***). The results of the ADBA are discussed in ***section 24.5***. The subsequent agreement during the first ETG Meeting (26th April 2018) was recorded in the Evidence Plan Agreement Log as: "…. *- initial stages of earthwork condition survey to be undertaken as part of ADBA walkover."*
Expert Topic Group (HSG)	26/04/2018 ETG Meeting Minutes	ETG recommends SPR makes provision for and commits to post-excavation public exhibitions and events, as part of the mitigation works.	Noted. Further discussion ultimately required between SPR, their advisors and the HSG.
Expert Topic Group (HSG)	26/04/2018 ETG Meeting Minutes	Study area needs to be expanded to include wider cultural heritage setting considerations, and to include landscape and heritage specific viewpoints of the substation.	Noted. Detailed consideration of heritage assets and their setting has been undertaken in accordance with GPA 3, initially as part of the ADBA undertaken by Headland Archaeology (***Appendix 24.1***). The results of the ADBA are discussed in ***section 24.5***.

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
			Discussion and tie-in has been made with the LVIA consultants for and on the proposed East Anglia ONE North project.
Expert Topic Group (HSG)	26/04/2018 ETG Meeting Minutes	ETG broadly agrees with the assessment methodology proposed in Archaeology and Cultural Heritage Method Statement (given the lack of an industry standard approach to heritage assessment within the framework of EIA.	Noted.
Expert Topic Group (HSG)	26/04/2018 ETG Meeting Minutes	ETG recommends that all conservation areas should be assigned high importance, as a matter of course.	Noted. Conservation areas are to be considered to be of high importance as a matter of course.
Expert Topic Group (HSG)	26/04/2018 ETG Meeting Minutes	ETG recommends that operational impact on cultural heritage setting from the buried cable is scoped back in for assessment if a western substation zone is selected (due to potential tree removal at Aldeburgh Road crossing and potential setting impact on Grade II Listed Building – Raidsend).	Noted. Agreed, as recorded in the Evidence Plan Agreement Log (26/04/2018).
Historic England	05/07/2018 WSI DBA response	We are broadly content with the WSI as it stands; please find a couple of additional points below.	Noted.
Historic England	05/07/2018 WSI DBA response	As discussed, we are content and broadly agree with the Scope of the document.	Noted.
Historic England	05/07/2018 WSI DBA response	We agree that this should include designated and non-designated assets and include an assessment of setting in relation to the latter.	No action.
Historic England	05/07/2018 WSI DBA response	I have already set out our views about the use of matrices in relation to the 2006 Design Manual for Roads and Bridges (DMRB) document which pre-dates the NPPF and is over 10 years out of date. I know you are aware of our reservations in that regard, however it is worth saying that we prefer a simple narrative description based on an exploration of the significance of a heritage asset and the way in which the setting contributes to this significance of that asset. It is important when undertaking the assessment work	Noted. Although the matrices will be maintained and utilised as part of a standardised approach to the wider EIA. The archaeology and cultural heritage chapter, and associated appendices (specifically the ADBA), will be underpinned by

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
		for the DBA to ensure the sites are considered in this way.	professional judgment, as part of a more qualitative approach, with a robust and reasoned narrative, wherever possible.
Historic England	05/07/2018 WSI DBA response	In terms of sources we do not have anything specifically to contribute by way of additions but we are aware of a number of internet resources that have photographs and details of Raidsend House, which it would be useful to include. I do not have the details but have been seen images produced from internet sources. We also wondered if the architect had left a legacy archive and whether original drawing may exist for the site and the layout of the grounds.	Noted. Suffolk County Council Senior Landscape Officer has suggested some further possible information sources, see below, which were checked and accessed as part of the ADBA (***Appendix 24.1***). The results of the ADBA are discussed in ***section 24.5***.
Historic England	05/07/2018 WSI DBA response	We also wanted to note that BGS borehole data may be useful to determine if there are any wet or potentially waterlogged deposits and potentially any Holocene or pre-Holocene beach deposits around the area of the landing. We are not aware of anything specific at this location but the Suffolk Coast is known to be a place where these deposits do exist?	Noted. The ADBA assess geological data available online from the BGS to inform an account of the underlying geology of the proposed onshore development area. It is further proposed that an archaeological watching brief / geoarchaeological monitoring be undertaken in line with engineering-led Ground Investigation (GI) works to inform upon potential deposits of geoarchaeological / archaeological interest. This will be subject to a survey-specific WSI to be agreed with the HSG in advance.
Historic England	05/07/2018 WSI DBA response	Finally, HE guidance some of which is due to change, if you want to know if we have any updated guidance or to get the latest versions please let me know.	Noted. Any intel on updated guidance was requested by Royal HaskoningDHV via email (06/07/2018).
Suffolk County Council Senior Landscape	07/06/2018 WSI DBA	Re. Raidsend other sources of information. *Does local info exist at Suffolk Record Office or with local history*	Noted These were checked and accessed as part

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
Officer	response	*Soc*? See.... http://aldringham.onesuffolk.net/parish-past-and-present/ Large Archive of papers at Leeds University also see: https://explore.library.leeds.ac.uk/special-collections-explore/8545	of the ADBA (***Appendix 24.1***). The results of the ADBA are discussed in ***section 24.5***.
Suffolk County Council Archaeological Service	03/07/2018 WSI DBA response	Table 4.1 – Historic Environment Record (HER) - the document references updated HER searches – these – and in fact the study area - should include the areas under consideration for proposed access roads, and a buffer to the south towards Friston.	Study area parameters assessed as part of the ADBA and this PEI chapter are detailed in ***section 24.3.1.***
Suffolk County Council Archaeological Service	03/07/2018 WSI DBA response	Table 4.1 - Additional to HER searches, provision should be made for research into reports and archives held by the HER, where appropriate.	Sources consulted during compilation of the ADBA (***Appendix 24.1***) are detailed in ***section 24.4.2.***
Suffolk County Council Archaeological Service	03/07/2018 WSI DBA response	Paragraphs 60-63 - The rapid earthwork survey etc should mention that it will be done in accordance with HE 'Understanding the Archaeology of Landscapes; a guide to good recording practice 2nd ed' (2017), although this is implicit. It should refer more generally to identifying areas out of recent cultivation as holding potential for earthworks, as a catch all.	Reference to be included in the Outline WSI.
Suffolk County Council Archaeological Service	03/07/2018 WSI DBA response	It would be helpful if there could be commentary/observations on any constraints to field evaluation, whilst they do the walkover, as this may save time later on.	Any constraints encountered (e.g. access, overgrowth) during the walkover survey are detailed in the ADBA (***Appendix 24.1***). The results of the ADBA are discussed in ***section 24.5***.
Suffolk County Council Archaeological Service	WSI Geophysical Survey	Thank you for this amended WSI which we are happy to approve in terms of methodology. We would again raise our concern regarding further refinement of any elements of the development scheme beyond the already refined area, until the results of the archaeological evaluation surveys are available. This is in order to retain the opportunity for flexibility within the scheme design, allowing for	Noted. Geophysical survey data will be scrutinised in order that archaeological information can be fed directly into the ongoing route refinement and siting considerations for the proposed East Anglia ONE North

Consultee(s)	Date / Document	Comment	Response / where addressed in the PEI
		preservation *in situ* / avoidance of significant archaeological remains as appropriate.	project, narrowing down the proposed onshore development area to preferred onshore cable route (where possible, within the confines of engineering and other environmental constraints).
Historic England	Substation Winter Photomontage Viewpoint Locations	I would appreciate the opportunity to have a chat about the view points before commenting.	Noted. Teleconference call held between HE and Royal HaskoningDHV - 19/07/2018.
Suffolk Preservation Society	Substation Winter Photomontage Viewpoint Locations	I would suggest the desk-based heritage assessment is completed first, to establish the significance of, and setting of, heritage assets within the study area. This assessment should [be undertaken] in order to inform the photomontage viewpoint locations.	Noted.

15. 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, and June / July 2018 with further events planned in 2019. A series of stakeholder engagement events were also undertaken in October 2018 as part of consultation phase 3.5. These events were held to inform the public of potential changes to the onshore substation location. This consultation aims to ensure that community concerns are well understood and that site specific issues can be taken into account, where practicable. Consultation phases are explained further in ***Chapter 5 EIA Methodology***. Full details of the proposed East Anglia TWO project consultation process will be presented in the Consultation Report, which will be submitted as part of the DCO application.

16. ***Table 24.2*** shows public consultation feedback pertaining to archaeology and cultural heritage. Consultation phases are explained further in ***Chapter 4 Site Selection and Assessment of Alternatives***.

Table 24.2 Public Consultation Responses relevant to Archaeology and Cultural Heritage

Topic	Response / where addressed in the PEI
Phase 1	
• None	-
Phase 2	
• 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). • Impact of sites 5 and 6 on Knodishall Church and sites of secondary Roman settlements • View of turbines from Grade I listed Moot Hill building	Embedded mitigation, including project design decisions to consider archaeology and cultural heritage where possible, are detailed in ***section 24.3.3*** Potential impacts to the setting of listed buildings are provided in ***section 24.6.1.3***
Phase 3	
• 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	Potential impacts to the setting of listed buildings are provided in ***section 24.6.1.3***
Phase 3.5	
• Construction should not damage St. Mary‘s Church (listed building) • Grade 2 listed cottages and houses next to the church in Friston • Friston war memorial • Area borders the ancient area of Friston moor • Archaeological impact of cable route • Theberton Grade 1 listed church impacted by traffic • Important mill complex in the village • Archaeological heritage asset impact • Impact on setting of Grade 2 listed Aldringham Court	Direct and indirect impacts on designated and non-designated buildings are assessed in ***section 24.6.1.2*** and ***section 24.6.1.3*** respectively. The potential impact to archaeological remains is assessed in ***sections 24.6.1.2*** and ***sections 24.6.1.4***.

24.3 Scope

24.3.1 Study Area

17. The study areas considered as part of this PEIR chapter are as per those outlined and agreed in the WSI for DBA (Royal HaskoningDHV 2018b) and as utilised and illustrated within the ADBA itself (***Appendix 24.1***). The study areas have been determined specially in relation to archaeology and cultural heritage concerns, and include a wider footprint than that afforded by the proposed onshore development area to ensure that all potential impacts are sufficiently covered as part of the assessment work, as well as to provide wider context.

18. The ADBA (***Appendix 24.1***) was prepared at a time when the proposed onshore development area was not yet defined. As such, the ADBA utilises an ADBA Study Area based on project design from July 2018. This is clearly presented in ***Appendix 24.1.*** The baseline and assessment presented in this chapter has been informed by the outputs of the ADBA, but has been updated appropriate to the proposed onshore development area.

19. At the time of preparing this document, study areas have been defined in relation to the proposed onshore development area (see ***Figure 24.1***) which consists of:

- Landfall (referred to throughout this chapter as the landfall location);
- Onshore cable corridor;
- East Anglia ONE North onshore substation;
- National Grid substation; and
- National Grid overhead line realignment works.

20. 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 proposed onshore development area[1] to gather baseline information on the known designated / non-designated heritage assets that may experience settings impacts as a result of the proposed East Anglia ONE North project and to inform the assessment of archaeological potential within the proposed onshore development area (for currently unrecorded heritage assets; and

[1] The size and extent of the ADBA Study Area exceeds and encompasses the proposed onshore development area assessed within this PEIR chapter. As a result, the study areas defined above are still regarded as sufficiently broad to assess the likely extent of impact upon the historic environment.

- The Outer Study Area (OSA): a 1km buffer extending from the limits of the proposed development area around the onshore substation and National Grid infrastructure to identify designated and non-designated heritage assets that may experience changes within their setting as a result of the proposed East Anglia ONE North project.

21. 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.

22. 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. They have been further informed by discussions with the LVIA consultants and the utilisation of associated tool-kits (e.g. Zones of Theoretical Visibility (ZTVs) and photomontages), where relevant.

23. Further work will be progressed on the definition of the study area parameters following progression of the detailed setting assessment. This will include a review of the proposed landscape mitigation plan (see ***Figure 29.11*** within ***Chapter 29 Landscape and Visual Impact***) against the identified designated heritage assets, as described in this chapter and associated appendices, and the identified non-designated heritage assets. Additionally, cultural heritage specific viewpoint locations will be determined that will further enable the cross-referencing between the LVIA and the Archaeology and Cultural Heritage assessment, and appropriate mitigation to be proposed, where appropriate.

24.3.2 Worst Case Scenarios

24. 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.

25. ***Chapter 6 Project Description*** details the project parameters using the Rochdale Envelope approach for the PEIR.

26. ***Table 24.3*** 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 actvities, and their durations, which fall within the construction phase.

Table 24.3 Realistic Worst Case Scenarios

Impact	Parameter	Notes
Construction		
Impacts related to the landfall	HDD temporary works area: 7,000m^2 (70m x 100m) Transition bay excavation footprint (for 2 transition bays): 1,554m^2 (37m x 42m) Landfall CCS: 18,400m^2 (160m x 115m) Landfall transition bays approximate quantity of spoil material (for 2 transition bays): 454m^3 See ***Chapter 25 Noise and Vibration*** for further details regarding noise and vibration levels during construction.	Landfall to be achieved via HDD. No beach access required.
Impacts related to the onshore cable corridor	Onshore cable route: 287,360m^2 (8,980m x 32m) Jointing bay construction excavation footprint: 570m^2 (30.6m x 18.6m). Total for 36 jointing bays: 20,520m^2 (570m^2 x 36) HDD (retained as an option to cross SPA / SSSI): • Entrance pit CCS (x1): 7,000m^2 (100m x 70m) • Exit pit CCS (x1): 3,000m^2 (100m x 30m) Onshore cable route CCS: 18,400m^2 (160m x 115m). Total for 5 CCS: 92,000m^2 (18,400m^2 x 5) Temporary roads: • Onshore cable route haul road between landfall and Snape Road (4.5m wide with additional 4m for passing places at approximately 87m intervals): 41,376m^2 • Onshore cable route and substation access haul road (9m width): 18,675m^2 • Temporary access road: 23,495m^2 Onshore cable trench approximate quantity of spoil material: 13,321m^3 See ***Chapter 25 Noise and Vibration*** for further details regarding noise and vibration levels during construction.	Onshore cable corridor construction footprint may be located anywhere within the proposed onshore development area. The location strategy for access routes, CCS and jointing bays will be to site them near to field boundaries or roads as far as practical. Two link boxes sit underground beside each jointing bay at a depth of approximately 1.2m. The construction footprint of these is included in the jointing bay construction excavation footprint.

Impact	Parameter	Notes
Impacts related to the onshore substation	Onshore substation CCS: 17,100m^2 (190m x 90m) Permanent footprint (used as CCS during construction): 36,100m^2 (190m x 190m) Substation operational access road: 12,800m^2 (1,600m x 8m) See ***Chapter 25 Noise and Vibration*** for further details regarding noise and vibration levels during construction.	Construction access is included above as the onshore cable route and substation access haul road.
Impacts related to the National Grid Infrastructure	National Grid substation CCS: 78,750m^2 (250m x 315m) Permanent footprint (used as CCS during construction): 45,500m^2 (325m x 140m) See ***Chapter 25 Noise and Vibration*** for further details regarding noise and vibration levels during construction.	Design for the required overhead line (OHL) realignment work (including cable sealing end CCSs and pylon realignment CCS) is currently on going. As more detail is made available, this will be fully assessed and included in the Environmental Statement (ES) and DCO application. However, indicative locations for cable sealing end CCSs and pylon realignment CCS are shown in ***Figure 6.6*** of ***Chapter 6 Project Description***. Construction access is included above as the onshore cable route and substation access haul road. Operational access is included above as the substation operational access road.
Operation		
Impacts related to the landfall	2 transition bays will be installed underground, each with an operational volume of 227m^3	Transition bays will be buried approximately 1.2m underground – there will no above ground infrastructure.
Impacts related to the onshore cable corridor	36 jointing bays will be installed underground, each with an operational volume of 77m^3 72 link boxes will be installed underground (2 per jointing bay), each with an operational volume of 3m^3	Jointing bays will be buried approximately 1.2m underground – there will no above ground infrastructure. Link boxes will be located underground immediately adjacent to jointing bays – there will be no above ground infrastructure.

Impact	Parameter	Notes
Impacts related to the onshore substation	Operational footprint: 36,100m^2 (190m x 190m) Substation operational access road: 12,800m^2 (1,600m x 8m)	The operational footprint does not include the additional landscaping footprint (which will be agreed post-PEIR).
Impacts related to the National Grid Infrastructure	National Grid operational substation: 45,500m^2 (325m x 140m)	The operational footprint does not include the additional landscaping footprint (which will be agreed post-PEIR). Design for the required overhead line (OHL) realignment work (including cable sealing end CCSs and pylon realignment CCS) is currently on going. As more detail is made available, this will be fully assessed and included in the Environmental Statement (ES) and DCO application. However, indicative locations for cable sealing end CCSs and pylon realignment CCS are shown in ***Figure 6.6*** of ***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. However, the onshore substation will likely be removed and be reused or recycled. It is expected that the onshore cables will be removed and recycled, with the transition bays and cable ducts (where used) left *in situ*. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. A decommissioning plan will be provided. As such, 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

27. 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***.

28. ***Table 24.4*** outlines the key embedded mitigation measures incorporated into the design of the proposed East Anglia ONE North project with specific regard

to the onshore historic environment. 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 24.4 Embedded Mitigation for Onshore Archaeology and Cultural Heritage

Parameter	Embedded mitigation measures relevant to the historic environment
Avoidance, Micro-siting and Route Refinement	The proposed 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. 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 initial interpretation of the archaeological geophysical survey have been, and will continue to be fed into ongoing route refinement (i.e. narrowing of the onshore cable corridor) considerations. This will ensure good practice is followed, falls in line and complies with HSG expectations and previous discussions in this regard (see ***section 24.2***) and ensures the proposed East Anglia ONE North project is minimising impacts on any 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 inform and play an active role in ongoing design decisions, enacting preservation *in situ* and ensuring that opportunities to reduce impacts on any obvious anomalies / features / sites identified to date are explored, wherever possible.
Landscape Screening and Planting	The proposed East Anglia ONE North project has made a further commitment to incorporate effective, appropriate and suitable landscape screening and planting as part of the ongoing onshore project substation design. See ***Chapter 29 Landscape and Visual Impact*** for more details.
Outline WSI	The proposed East Anglia ONE North project will submit a project-specific Outline WSI as part of the ES to accompany the DCO application, which will outline a commitment 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.

29. As well as informing discussions regarding route 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.

30. Where impacts upon known heritage assets are unavoidable, a series of mitigation measures will be put in place to reduce (or offset) the scale of the impact (see ***section 24.3.3.1***).

24.3.3.1 Additional Mitigation

31. Additional mitigation measures will ultimately be tailored in a bespoke manner, in response to the assessment undertaken to date with respect to onshore archaeology and cultural heritage alongside the results of ongoing and forthcoming survey work (see ***section 24.4.2***, ***Table 24.7***). 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.

32. As part of the embedded mitigation, a project-specific Outline WSI will be submitted as part of the ES to accompany the DCO application, which will outline a commitment to undertake additional programmes of survey and evaluation post-consent, to be referred to as 'initial informative stages of mitigation work', e.g. any outstanding geophysical survey, targeted field walking and metal detecting.

33. 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.);
- Set-piece (open-area) Excavation: including subsequent post-excavation assessment, and analysis, publication and archiving;
- Strip, Map and Record (or Sample) 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).

34. The initial informative stages of mitigation and subsequent mitigation work will be 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).

35. Impact to the character of the historic landscape will be in part mitigated by returning field boundaries and hedgerows to their preconstruction condition and character post-construction. Once the proposed East Anglia ONE North project design has been further finalised (in the post-consent / pre-construction stages), certain hedgerows and field boundaries (e.g. parish boundaries) may require

recording prior to / during the construction process and enhanced provisions made during backfilling and reinstatement.

36. In addition to those potential mitigation approaches outlined 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).

37. 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 SPR, and is applicable to UK projects only. 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.

38. 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.

39. 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 outline WSI (including reference to the PAD) will be submitted with the DCO application.

24.3.4 Monitoring

40. Post-consent, the final detailed design of the proposed East Anglia ONE North project and the development of the relevant management plan(s) will refine the worst-case parameters assessed in the EIA. It is recognised that monitoring is an important element in the management and verification of the impacts of the proposed East Anglia ONE North project. Outline management plans, across a number of environmental topics, will be submitted with the DCO application. These outline management plans will contain key principles that provide the framework for any monitoring that could be required. The requirement for a final appropriate design and scope of monitoring will be agreed with the relevant stakeholders and included within the relevant management plan(s), submitted for approval, prior to construction works commencing.

24.4 Assessment Methodology

41. The following sections set out the assessment methodology used to assess baseline conditions for onshore 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

42. 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).

43. ***Table 24.5*** sets out how specific NPS policies relevant to onshore archaeology and cultural heritage are addressed within this chapter.

Table 24.5 NPS Assessment Requirements for This Historic Environment

NPS requirement	NPS reference	PEI reference
EN-1 Overarching NPS for Energy		
'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.'	Section 5.8.8	A detailed heritage settings assessment has been commenced, the first stages of which are detailed in the ADBA (***Appendix 24.1***). This assessment identifies 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. This assessment both informs and is summarised within ***section***s ***24.5*** and 24.6 of this PEIR chapter, as relevant.
'Where a development site includes, or the available evidence suggests it has the potential to include, heritage assets with an archaeological interest, the applicant should carry out appropriate desk-based assessment and, where such desk-based research is insufficient to properly assess the interest, a field evaluation. *Where proposed development will affect the setting of a heritage asset, representative visualisations may be necessary to explain the impact'.*	Section 5.8.9	An ADBA has been undertaken (***Appendix 24.1***) and informs this PEIR chapter. This ADBA 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 LiDAR data). The ADBA also includes a settings assessment which has been progressed using available landscape and visual assessment tools-kits (e.g. ZTVs and photomontages). The ADBA both informs and is summarised within ***section***s ***24.5*** and ***24.6*** of this PEI chapter, as relevant. In addition, a geophysical survey is currently underway to gather information to establish the presence / absence, character and extent of any archaeological remains within the proposed onshore development area, and to inform further strategies should they be necessary. Archaeological geophysical survey data and initial interpretation will be fed into ongoing route refinement (i.e. narrowing of the onshore cable corridor) considerations. The results of this assessment

NPS requirement	NPS reference	PEI reference
		will be included as part of the later ES chapter.
'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.'	Section 5.8.10	This PEIR provides an account of the potential impact of the proposed East Anglia ONE North project upon heritage assets and their significance (***section* 24.6**). This PEI chapter has been informed by an ADBA (see ***Appendix 24.1*** – including aerial photographic / LiDAR data assessment, walkover survey results and initial heritage settings assessment). The result of the geophysical survey assessment (currently underway) will ultimately inform the later ES chapter.
'In considering applications, the Infrastructure Planning Commission (IPC) [now the Planning Inspectorate 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: *•Evidence provided with the application;* *•Any designation records;* *•The Historic Environment Record, and similar sources of information;* *•The heritage assets themselves;* *•The outcome of consultations with interested parties; and* *•Where appropriate and when the need to understand the significance of the heritage asset demands it, expert advice'*	Section 5.8.11	This PEIR assesses the potential for impacts to occur upon the onshore archaeology and cultural heritage resource as a result of the proposed East Anglia ONE North project. Impacts of a direct (e.g. physical) and indirect (e.g. non-physical) 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 significance). This approach is outlined in ***section 24.4*** with the heritage assets set out in the baseline conditions ***section*** in ***section 24.5*** and assessment detailed in ***section*s *24.6*** and ***24.7***.
'In considering the impact of a proposed development on any heritage assets, the IPC [now the Planning Inspectorate 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.'	Section 5.8.12	Heritage significance is assigned in line with the methodology set out in ***section 24.4.2.1*** based on available data. With regards to potential below ground remains, this data is predominantly non-intrusive in nature and as such, 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 has been adopted which will be further substantiated

NPS requirement	NPS reference	PEI reference
		following further archaeological evaluation approaches (e.g. geophysical survey).
'The IPC [now the Planning Inspectorate 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: *•Heritage assets having an influence on the character of the environment and an area's sense of place;* *•Heritage assets having a potential to be a catalyst for regeneration in an area, particularly through leisure, tourism and economic development;* *•Heritage assets being a stimulus to inspire new development of imaginative and high quality design;* *•The re-use of existing fabric, minimising waste; and* *•The mixed and flexible patterns of land use in historic areas that are likely to be, and remain, sustainable.* *…The IPC [now the Planning Inspectorate 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 Planning Inspectorate 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]'.*	Section 5.8.13	In order to assess the positive contributions of the proposed East Anglia ONE North project in the context of onshore archaeology and cultural heritage, the magnitude of positive effect has also been subject to consideration in this PEIR chapter. The magnitude of positive effect 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. by means of route refinement / micro siting which seek to avoid heritage assets) or where a project will enhance the historic environment and / or public understanding (e.g. by adding to the archaeological record). This is discussed in ***section 24.4.2.1*** and ***section 24.6***). Opportunities to minimise harm to the onshore historic environment will be fully considered and developed as the proposed East Anglia ONE North project progresses, post-PEIR to ES, with feedback from community and stakeholder consultation taken on-board.
'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 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	Section 5.8.14	The proposed onshore development area will avoid physical impacts upon known (e.g. previously listed / scheduled) designated heritage assets and as such, no direct physical impacts are anticipated to occur to designated heritage assets (***section 24.5.2***). Indirect (non-physical) impacts upon the setting of heritage assets are assessed in ***section 24.6*** (with

NPS requirement	NPS reference	PEI reference
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.'*		further detail in ***Appendix 24.1***). To date, baseline data has been subject to a two-stage filtering process to produce a short-list of heritage assets worthy of further consideration from a settings perspective. The settings assessment undertaken to date has identified six designated heritage assets where there is potential for heritage significance to be materially affected by change in their settings due to the East Anglia ONE North project. These assets will be taken forward as part of the settings assessment, to be progressed between PEIR and ES, at which stage predicted effects can be assessed against refined design parameters.
'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.'	Section 5.8.15	The proposed onshore development area will avoid physical impacts upon known (e.g. previously listed / scheduled) designated heritage assets and as such, no direct physical impacts are anticipated to occur to designated heritage assets (***section 24.5.2***). Indirect (non-physical) impacts upon the setting of heritage assets are discussed in ***section 24.6*** (with further detail in ***Appendix 24.1***). The settings assessment undertaken to date has identified six designated heritage assets where there is potential for heritage significance to be materially affected by change in their settings due to the East Anglia ONE North project. These assets will be taken forward as part of the settings assessment, to be progressed between PEIR and ES, at which stage predicted effects can be assessed against refined design parameters.
'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	Section 5.8.16	The proposed onshore development area will avoid physical impacts upon World Heritage Sites and Conservation Areas. In addition, there are no examples of World Heritage Sites or Conservation Areas within the areas where there would be change in the settings of

NPS requirement	NPS reference	PEI reference
significance of the World Heritage Site or Conservation Area as a whole.'		heritage assets (see ***Appendix 24.1***).
'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.'	Section 5.8.17	This PEIR chapter has concluded, based on assessments undertaken to date, that the proposed East Anglia ONE North project will not result in the loss of significance of (or harm to) any designated heritage assets identified in this chapter (***section 24.6***). This conclusion has been based on the results of an ADBA which included site visits and the incorporation and use of landscape and visual tool-kits (e.g. ZTV and photomontages), with respect to heritage setting. The significance of non-designated heritage assets has to date been established through an ADBA (see ***Appendix 24.1*** – including aerial photographic / LiDAR data assessment, walkover survey results and initial heritage settings assessment) and will also be informed by the archaeological assessment of geophysical survey data (currently underway).
'*When considering applications for development affecting the setting of a designated heritage asset, the IPC [now the Planning Inspectorate 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 Planning Inspectorate 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.'*	Section 5.8.18	The heritage settings assessment will be progressed between PEIR and ES. To date, six designated heritage assets have been identified where there is potential for heritage significance to be materially affected by change in their settings due to the East Anglia ONE North project (see ***section 24.6*** and ***Appendix 24.1***). These assets will be taken forward as part of the settings assessment, to be progressed between PEIR and ES, at which stage predicted effects can be assessed against refined design parameters.
EN-3 NPS for Renewable Energy Infrastructure		
'Consultation with the relevant statutory consultees should be undertaken by the applicants at an early stage of the development.'	Section 2.6.140	Regular consultation has been, and will continue to be undertaken with the HSG (see ***section*** *24.2*).

NPS requirement	NPS reference	PEI reference
'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.'	Section 2.6.141	This PEIR chapter has been undertaken in accordance with section 5.8 of EN-1, as detailed above. It has also been informed by an ADBA (see ***Appendix 24.1***). The results of the geophysical survey (currently underway) will be assessed post-PEI and reported on fully as part of the later ES chapter. It is further proposed that an archaeological watching brief / geoarchaeological monitoring be undertaken in line with engineering-led GI works to inform upon potential deposits of geoarchaeological / archaeological interest.

44. This PEIR chapter has also been undertaken in a manner consistent with the NPPF, a revised version of which was published by the Ministry of Housing, Communities and Local Government (MHCLG) in July 2018, replacing the original policy from March 2012. Provision for the historic environment is principally given in Section 16: Conserving and enhancing the historic environment of the NPPF, which directs local authorities to set out "*a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats*". Local planning authorities should recognise that heritage assets are "*an irreplaceable resource, and should be conserved in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations*" (MHCLG 2018).

45. The aim of NPPF Section 16 is to ensure that Regional Planning Bodies and local authorities, developers and owners of heritage assets adopt a consistent and holistic approach to their conservation and to reduce complexity in planning policy relating to proposals that affect them.

46. 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.

47. The NPPF's associated PPG 'Conserving and enhancing the historic environment' (Department for Communities and Local Government (DCLG) 2014) includes further information and guidance on how national planning policy is to be interpreted and applied locally. Although the PPG is an important and relevant consideration in respect to this project, NPS EN-1 is the key decision making document.

48. 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.

49. 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.

50. The location of the proposed onshore development area falls under the jurisdiction of SCC and SCDC[2]. To ensure a robust assessment has been undertaken, the local plan for Waveney District Council (WDC) has also been considered. Local policies and key objectives relevant to the historic environment within the study area are as follows:

- SCC Priorities 2017-21 (SCC 2017);
- SCDC Suffolk Coastal Local Plan[3]: First Draft Local Plan (SCDC 2018); and
- WDC new Local Plan (WDC 2018).

51. Further details can be found in ***Chapter 3 Policy and Legislative Context***.

[2] SCDC are in the process of merging with Waveney District Council into an East Suffolk Council. At the time of writing the council have not yet merged.
[3] Consultation period: 20th July to 14th September 2018

24.4.1.2 Assessment Guidance

52. In demonstrating adherence to industry good practice, this PEIR 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) (2014) Standards and guidance, including Standard and guidance for historic environment desk-based assessment;
- The Historic Environment in Local Plans: Historic Environment 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

53. The baseline conditions set out in this PEI chapter have been established based on the results of a detailed ADBA (***Appendix 24.1***). The ADBA was undertaken to inform the onshore archaeology and cultural heritage baseline, utilising the following sources of data shown in ***Table 24.6***.

Table 24.6 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 27th June 2018).	Suffolk Historic Environment Record (HER) maintained by SCCAS.
Historic Landscape Characterisation (HLC) mapping data.	Suffolk HER maintained by SCCAS.
National Mapping Programme (NMP) Data (obtained as a digital data extract on 27th June 2018).	Suffolk HER maintained by SCCAS.
Designated heritage assets across England (downloaded from the Historic England website on 8th January 2019).	National Heritage List online maintained by Historic England.
Recorded archaeological sites and historic buildings across England (obtained as a digital data extract on 4th July 2018).	The National Record for the Historic Environment (NRHE) / Historic England Archive maintained by Historic England.

Data	Source
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 / National Mapping Programme / APEM fly over.
LiDAR Data.	Environment Agency / environment.data.gov.uk.
Finds 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 and supplemented by a search of the PAS website on 30th July 2018).	Suffolk HER / the PAS database.
Regional, Local and Period Archaeological Studies and Journals.	Various.
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.

54. In addition to the desk-based data sources outlined above, the ADBA was informed by site visits undertaken by Headland Archaeology, including walkovers and specific consideration of setting, to examine the baseline setting of heritage assets identified as having the potential for changes to their setting as a result of the proposed East Anglia ONE North project. A walkover of the accessible areas of the earlier proposed onshore development area was also 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.

55. As part of the EIA process, a number of data gathering and survey campaigns are also underway or will take place to support the production of the PEIR (where possible, depending on timings) and subsequent ES. Survey data which may be aquired and archaeologically assessed as part of the pre-application process are presented in ***Table 24.7***.

Table 24.7 Survey Data Sources

Data	Year	Coverage	Confidence	Notes
Geophysical (magnetometer - gradiometer) survey data.	2018.	Geophysical survey coverage anticipated to cover the entire Proposed onshore development Area.	To be determined once the survey is complete.	Geophysical data acquired and archaeologically assessed to date as part of a preliminary interpretation exercise inform this PEI chapter, where relevant and available. An interim summary report of results to date is included as ***Appendix 24.2***. Final survey results will be fully incorporated into the subsequent ES chapter.
Archaeological Metal Detecting Survey.	TBC (to be considered pre-consent), requirement to be reviewed after ADBA.	TBC – Likely Targeted.	Not yet undertaken or determined.	Proposed to be conducted over targeted areas. To be subject to a survey-specifc WSI to be agreed with the HSG in advance.
Archaeological Fieldwalking Survey.	TBC (to be considered pre-consent), requirement to be reviewed after ADBA.	TBC – Likely Targeted.	Not yet undertaken or determined.	Proposed to be conducted over targeted areas. To be subject to a survey-specifc WSI to be agreed with the HSG in advance.
Trial-trenching.	N/A	N/A	The Applicant will not be undertaking pre-consent archaeological trial trenching.	A full and comprehensive programme of trial trenching will be planned, programmed, agreed and undertaken post-consent, in discussion with the HSG.
Earthwork Condition (GPS / topographic) Survey.	TBC (pre-or post-consent).	TBC – Targeted.	Not yet undertaken or determined.	Proposed to be conducted over targeted areas. To be subject to a survey-specifc WSI to be agreed with the HSG in advance. Note: the initial stages of the earthwork condition survey have

Data	Year	Coverage	Confidence	Notes
				been undertaken as part of the ADBA walkover.
Archaeological Watching Brief / Geoarchaeological Monitoring of Engineering-led GI works.	TBC.	TBC – Targeted.	Not yet undertaken or determined.	Proposed to be undertaken in line with Engineering-led GI works. To be subject to a survey-specifc WSI to be agreed with the HSG in advance.

24.4.2.1 Geophysical Survey: Progress to Date

56. A programme of onshore archaeological geophysical survey[4] (detailed magnetometry) has been undertaken by Headland Archaeology within and across the proposed onshore development area (commencing in July and continuing through August and into September 2018).

57. The principal objectives of the programme of geophysical survey were to gather information to establish the presence / absence, character and extent of any sub-surface archaeological remains within the proposed onshore development area, and to inform further strategies should they be necessary. The acquisition of geophysical survey data has also been undertaken to allow for micro-siting where feasible within the larger land take area, with survey data and initial interpretation being fed into ongoing route refinement (i.e. narrowing of the onshore cable corridor) considerations. This process has ensured that good practice is followed, falling in line and complying with HSG expectations and previous discussion in this regard (see ***section 24.2***) and has ensured that the proposed East Anglia ONE North project is minimising impacts on any potentially important looking (e.g. potentially substantial and complex) sub-surface archaeological remains; considering and enacting preservation *in situ*; and ensuring impacts on the any obvious anomalies / features / sites identified to date are reduced, wherever possible within the confines of other environmental and engineering constraints.

58. At the time of compiling this chapter, geophysical survey data has been acquired across the substation location and within all fields associated with the proposed onshore development area where crops have been harvested and site access was possible. A report outlining the preliminary results of the archaeological assessment of geophysical survey data acquired to date across the proposed onshore development area, including a draft interpretation of broad AAAs, has been produced by Headland Archaeology (***Appendix 24.2***).

[4] Undertaken in compliance with the Method Statement for Onshore Geophysical Survey (Headland Archaeology 2018) (as agreed in advance with SCCAS)

59. Preliminary assessment undertaken to date demonstrates that the prevailing geological and pedological conditions are favourable for the detection of sub-surface archaeological remains. Survey data indicates a number of areas with a good magnetic contrast, with anomalies clearly indicative of archaeological features / activity being identified. Of those anomalies / features identified, the majority were previously unknown. Overall, the interim results both add significantly to the archaeological understanding of the landscape of the proposed onshore development area and also indicate high archaeological potential across many parts of the onshore cable corridor surveyed to date. The broad AAAs identified to date across the proposed onshore development area are summarised in ***section 24.5.3.2.1***.

60. The detailed archaeological assessment of geophysical survey data across the remaining entirety of the proposed onshore development area will be incorporated in full as part of the ES chapter. Geophysical survey data continues to be fed into the iterative design process so that impacts upon more substantial, complex and potentially more important looking archaeological remains can be avoided, off-set or reduced, wherever possible.

24.4.3 Impact Assessment Methodology

61. 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 onshore archaeology and cultural heritage, as discussed and agreed in consultation with the HSG (see ***section 24.2***).

62. The impact assessment methodology adopted for onshore 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 assess possible indirect (non-physical) impacts upon 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.

63. More specifically the impact assessment presents:

- The perceived heritage importance (in many cases associated with heritage significance, including the contribution that setting makes to that significance) of any heritage assets identified as being affected, both designated and non-designated;
- The anticipated magnitude of effect (change) upon those assets identified and their settings;

- The significance of any identified impacts upon those assets identified and their settings; and
- The level of any harm (or benefit) and associated loss of heritage significance, where relevant.

64. The impact assessment methodology adopted may differ from the standard approach adopted more generally within the PEIR 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 NPPF of benefit, harm and loss.

65. The impact assessment has been undertaken with the embedded mitigation as the starting point (i.e. there will not be an assessment of impact followed by an assessment of residual impact).

66. Residual impacts will include any additional mitigation measures required. An assessment will then be made of residual impacts, after assuming implementation of additional mitigation measures where required, i.e. the significance of the effects that are predicted to remain after the implementation of all committed mitigation measures.

24.4.3.1 Sensitivity (Heritage Importance)

67. The sensitivity of a receptor (heritage asset) is a function of its capacity to accommodate change and reflects its ability to recover if it is affected. However, while impacts to a heritage asset's setting or character can be temporary, impacts which result in damage or destruction of the assets themselves, or their relationship with their wider environment and context, are permanent. Once destroyed a heritage asset cannot recover. On this basis, the assessment of the significance of any identified impact is largely a product of the heritage importance of an asset (rather than its sensitivity) and the perceived magnitude of the effect on it, assessed and qualified by professional judgement.

68. An assessment of effects on an asset involves an understanding of the heritage importance of the asset and, in the case of an effect on the setting of that asset, the contribution that the setting makes to the heritage importance (or 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, 2018).

69. The initial indicative criteria for determining the heritage importance of any relevant heritage assets are described in ***Table 24.8***.

70. 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.

71. Establishing heritage importance (or likely heritage importance) of an asset or group of assets, and the related impact significance by considering the perceived magnitude of effect on the asset or assets, assists in the development of appropriate evaluation and mitigation approaches. It is important to note that the heritage importance of an asset can be amended or revised as more information comes to light.

72. ***Table 24.8*** 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 24.8*** provides a definition for assets of an uncertain heritage importance, where uncertainty occurs, the precautionary approach is to assign high importance. This precautionary approach represents good practice in archaeological impact assessment and reduces the potential for impacts to be under-estimated.

Table 24.8 Indicative Criteria for Determining Heritage Importance

Heritage Importance	Definition
High (perceived International / National Importance)	World Heritage Sites Scheduled Monuments Grade I, II* and II Listed Buildings or structures Designated historic landscapes of outstanding interest Conservation Areas containing buildings with a high heritage significance Assets of acknowledged international / national importance Assets that can contribute significantly to acknowledged international / national research objectives
Medium (perceived Regional Importance)	Locally Listed' buildings or structures Designated special historic landscapes Assets that contribute to regional research objectives Assets with regional value, educational interest or cultural appreciation
Low (perceived	Assets that contribute to local research objectives

Heritage Importance	Definition
Local Importance)	Assets with local value, educational interest or cultural appreciation Assets that may be heavily 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

24.4.3.2 Magnitude

73. The classification of the magnitude of effect on known heritage assets takes account of such factors as:

- The physical scale and nature of the anticipated impact; and
- Whether specific features or evidence would be lost that are fundamental to the historic character and integrity of a given asset, and its understanding and appreciation.

74. Both direct physical and indirect non-physical (e.g. visual, setting) impacts on 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.

75. 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, effects upon the setting of heritage assets will depend upon the scale and longevity of the proposed East Anglia ONE North project and the sensitivity with which the landscape is re-instated subsequent to decommissioning / demolition, if applicable.

76. The indicative criteria used for assessing the negative magnitude of effect with regard to archaeology and cultural heritage are presented in ***Table 24.9***.

Table 24.9 Indicative Criteria for Assessing Negative Magnitude of Effect

Magnitude	Definition
High	Total loss of or substantial harm to an asset.
Medium	Partial loss of, harm to or alteration of an asset which will affect its significance.
Low	Minor loss of or alteration to an asset which leave its current significance largely intact.
Negligible	Minor alteration to an asset which does not affect its significance in any notable way.
None / Nil	No alteration to an asset.

77. 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 effect on the asset, as well as the subsequent anticipated impact significance (see ***section 24.4.3.3***).

78. The magnitude of positive (beneficial) effect with respect to archaeology and cultural heritage directly relates to the level of public value associated with an individual effect. 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) or ensure that a direct impact is avoided (e.g. by ensuring archaeological / cultural heritage input into the site selection process so that onshore cable route refinement / micro-siting can be factored into the final application boundary).

79. 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 positive effect (high / medium / low) is, therefore, necessarily situational and specific to a given site, area or subject. For this reason, magnitude of positive effect is generally discussed within the narrative of an assessment according to criteria defined on a case by case basis, and not defined by overarching criteria as for negative magnitude of effect. One such example of a positive magnitude of effect 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 for both public and planning related enquiries.

24.4.3.3 Impact Significance

80. Following the identification of the heritage importance of the receptor (heritage asset), and the magnitude of the impact (effect / change), it is possible to

determine the significance of the impact using the matrix presented in ***Table 24.10***.

81. Assessment of impact significance 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 24.10 Impact Significance Matrix

		Negative 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*

82. ***Table 24.11*** outlines the impact significance definitions / categories and some possible indicative-type scenarios.

83. 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 24.11 Impact Significance Definitions

Impact Significance (level)	Definition
Major	Very large or large change in receptor (asset) condition, both adverse or beneficial, which are likely to be important considerations at a regional or district level because they contribute to achieving national, regional or local objectives, or, could result in exceedance of statutory objectives and / or breaches of legislation. Possible scenario: May equate to substantial harm or total loss of the heritage significance of a designated heritage asset (or asset worthy of designation) such that development may not be consented unless substantial public benefit is delivered by the proposed East Anglia ONE North project. Effective/acceptable mitigation options may still be possible, to offset and / or reduce residual impacts to satisfactory levels.
Moderate	Intermediate change in receptor (asset) condition, which are likely to be important considerations at a local level. Possible scenario: Less than substantial harm to the heritage significance of a

Impact Significance (level)	Definition
	designated heritage asset (or asset worthy of designation) such that the harm should be weighed against the public benefit delivered by the proposed East Anglia ONE North project to determine consent. Effective / acceptable mitigation options are likely to be possible, to offset and / or reduce residual impacts to satisfactory levels.
Minor	Small change in receptor (asset) condition, which may be raised as local issues but are unlikely to be important in the decision making process. Possible scenario: Harm to a designated or non-designated heritage asset that can be adequately compensated through the implementation of a programme of industry standard mitigation measures.
Negligible	No discernible change in receptor (asset) condition. Impact that is nil, imperceptible and not significant.
No change	No impact, therefore no change in receptor (asset) condition.

84. 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).

85. Embedded mitigation (see ***Table 24.4***) (for example where potential impacts may be avoided through detailed design, and hence heritage assets are therefore preserved *in situ*, where possible, and / or through the use of trenchless crossing techniques for instance) are referred to and included in the initial assessment of impacts as part of this PEI chapter. If the impact does not require mitigation (or none is possible) the residual impact will remain the same. If however, mitigation is required then there will be an assessment of the post-mitigation residual impact.

86. As part of the embedded mitigation, the proposed East Anglia ONE North project will also submit a project-specific Outline WSI as part of the DCO application, which will outline a commitment to undertake additional programmes of survey and evaluation post-consent (to be referred to as initial informative stages of mitigation work), and will include a range of likely mitigation options and responses to be utilised under various scenarios.

24.4.4 Historic Landscape Character

87. 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 character[5]. 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 24.8*** (where relevant).

88. 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.

89. 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 24.1***) 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 24.10***, 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.

24.4.5 Cumulative Impact Assessment

90. The proposed East Anglia ONE North project Cumulative Impact Assessment (CIA) will initially consider the cumulative impact with only the East Anglia TWO project against two different construction scenarios (i.e. construction of the two projects simultaneously and sequentially). The worst case scenario of each impact is then carried through to the traditional CIA which considers other developments which are in close proximity to the proposed East Anglia ONE North Project.

91. 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

[5] 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 be confined to effects of the proposed East Anglia ONE North and East Anglia TWO projects.

92. Cumulative impacts upon the setting of designated and non-designated heritage assets may occur. The settings assessment, undertaken as part of the archaeological ADBA (***Appendix 24.1***) in line with Historic England guidance (see ***section 24.4.1***), has been developed within this PEI chapter using landscape and visual assessment tools-kits (e.g. ZTVs and initial photomontages), particularly in relation to above ground infrastructure, with the aim of identifying any connections and associations with other existing and / or planned infrastructure of relevance.

24.5 Existing Environment

24.5.1 Introduction

93. The following sections provide a summary of the known and potential onshore archaeological and cultural heritage resource within the study areas. The baseline environment as set out below is based on findings presented within the ADBA (***Appendix 24.1***), 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 24.6***), including aerial photographic and LiDAR data assessment and preliminary heritage settings assessment (supplemented by a field reconnaissance survey and site visits).

94. 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 24.6***) and the preliminary archaeological assessment of geophysical survey data acquired in the substation location and the fields in the western half of the proposed onshore development area where the crops have been harvested. At this stage of enquiry, not all sites or features that are considered to represent below ground archaeological remains have been evaluated through non-intrusive (e.g. geophysical survey – survey commenced July 2018 and is ongoing) evaluation approaches, particularly within the eastern extent of the proposed onshore development area (see ***section 24.4.2.1***). At the time of compiling this document, no sites or features have been assessed as part of intrusive evaluation approaches.

95. The archaeological periods referred to in the text 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

96. There are 25 designated heritage assets within the ISA (***Figure 24.2, Appendix 24.3*** and ***Appendix 24.1, Figure 5***), comprising three Scheduled Monuments and 22 Grade II Listed Buildings.

97. There are 24 designated heritage assets within the OSA (***Figure 24.2, Appendix 24.3*** and ***Appendix 24.1, Figure 7***), comprising four Grade II* Listed Buildings and 21 Grade II Listed Buildings.

24.5.2.2 Summary of Designated Heritage Assets within the Proposed Onshore Development Area

98. There is one designated heritage asset within the proposed onshore development area (Little Moor Farm, 1215743, Grade II).

24.5.2.3 Heritage Settings Assessment

99. The onshore construction will avoid direct (physical) impacts upon known (e.g. previously listed / scheduled) designated heritage assets. Indirect (non-physical) impacts may, however, take place. Designated heritage assets have also been considered as part of an ongoing heritage settings assessment, summarised below, detailed in ***Appendix 24.1*** and incorporated into the impact assessment presented in this PEIR, thus enabling potential indirect (non-physical) impacts resulting from the proposed East Anglia ONE North project to be identified and better understood.

100. 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 ('Identify

which heritage assets and their settings are affected') has been carried out and reported on within the ADBA (***Appendix 24.1***), the results of which inform this PEIR chapter. However, in order to develop an understanding of how setting contributes to the significance of heritage assets and the likely effects of the proposed East Anglia ONE North project, the assessment as presented in the ADBA also begins to address Step 2 ('Assess the degree to which these settings make a contribution to the significance of the heritage asset(s) or allow significance to be appreciated') and Step 3 ('Assess the effects of the proposed development, whether beneficial or harmful, on the significance or on the ability to appreciate it').

101. The settings assessment approach is detailed in ***Appendix 24.1***. The following paragraphs provide a high-level summary of the approach adopted to date.

102. All heritage assets (designated and non-designated) within the study areas[6] have been included in the assessment (***Figures 24.2*** and ***24.3***). Any significant effects on heritage significance, should they arise, are expected to occur as the result of visual change in the setting of assets, and could include both day time visibility of above-ground structures and night time visibility due to lighting of these structures. There is no reason to predict, based on current data, that changes in other factors relating to setting (e.g. noise) would materially affect heritage significance.

103. All heritage assets within these parameters were subject to a two-stage filtering exercise with the ultimate aim of producing a short-list of assets considered to warrant further consideration at the PEIR (and subsequent ES) stages of the proposed East Anglia ONE North project. The filtering process, which has been further informed by ZTV mapping and site visits, can be summarised as follows:

- First filter: identifies those parts of the study area where there would be material change in settings due to the operation of the proposed East Anglia ONE North project; and
- Second filter: addresses all assets in those areas where there would be material change in settings due to the operation of the proposed East Anglia ONE North project and to identify assets where the nature of the contribution that setting makes to the significance results in potential for material harm.

[6] No designated heritage assets beyond the 1km boundary of the earlier proposed onshore development area were identified as being particularly sensitive and likely to experience significant effects as a result of the proposed East Anglia ONE North project. See ***Appendix 24.1*** for further explanation.

104. As a result of the application of these filters (the process of which is detailed in ***Appendix 24.1***), six designated heritage assets (Listed Buildings) have been identified 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 (see ***Figure 24.2*** and ***Appendix 24.1, Figures 5*** and ***7***), as follows:

- Church of St Mary, Friston (1287864, Grade II*);
- Little Moor Farm (1215743, Grade II);
- Woodside Farmhouse (1215744, Grade II);
- High House Farm (1216049, Grade II);
- Friston House (1216066, Grade II); and
- Aldringham Court (1393143, Grade II).

105. Settings assessment work undertaken to date in relation to the designated heritage assets outlined above is discussed, where relevant, in ***section 24.6***. This assessment is informed by preliminary statements prepared for each of these heritage assets as part of the ADBA, summarising the heritage significance of each asset with a focus on the contribution made by the setting.

106. Further work is being progressed on the settings assessment outside the detail included in this PEIR chapter. This includes a review of the proposed landscape mitigation plan (see ***Figure 29.11*** within ***Chapter 29 Landscape and Visual Impact***) against the identified designated heritage assets, as above, and the identified non-designated heritage assets (see ***section 24.5.3.3***). Additionally, cultural heritage specific viewpoint locations are being determined with respect to the setting of heritage assets. Further details on this work, and a full settings assessment will be provided in the Environmental Statement submitted with proposed East Anglia ONE North DCO application.

24.5.2.4 Heritage Importance

107. Based on the criteria shown in ***Table 24.8***, the designated heritage assets outlined in ***section 24.5.2.3*** (***Figure 24.2*** and ***Appendix 24.1, Figures 5*** and ***7***) are considered to be assets of high heritage significance with perceived national importance.

24.5.3 Non-Designated Heritage Assets

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

108. There are 277 non-designated heritage assets within the study areas[7] (***Figure 24.3, Appendix 24.4*** and ***Appendix 24.1, Figures 6*** and ***8***), comprising 204 previously recorded non-designated assets and 73 previously unrecorded heritage assets. Of the 204 previously recorded heritage assets, 52 lie within the proposed development area, 134 within the ISA and 17 within the OSA, with one additional heritage asset extending across both the ISA and OSA. Of the 73 previously unrecorded heritage assets, 61 are identified within the proposed development area, with a further four located within the ISA and the remaining eight within the OSA. The construction of the proposed East Anglia ONE North project has the potential to result in direct (physical) and indirect (non-physical) impacts upon non-designated heritage assets.

109. Non-designated heritage assets potentially subject to direct (physical) impacts are confined to the proposed onshore development area and may comprise potential sub-surface archaeological remains and above ground heritage assets.

110. Non-designated heritage assets which may be subject to indirect (non-physical) impacts as a result of the proposed East Anglia ONE North project may be either within or beyond the parameters of the proposed onshore development area. Non-designated heritage assets have also been considered as part of an ongoing heritage settings assessment, summarised in ***section 24.5.3.3***, detailed in ***Appendix 24.1*** and incorporated into the impact assessment presented in this PEIR, thus enabling potential indirect (non-physical) impacts resulting from the proposed East Anglia ONE North project to be understood.

24.5.3.2 Non-designated Heritage Assets Within the Proposed Onshore Development Area

111. There are 113 non-designated heritage assets within the proposed onshore development area, comprising 52 heritage assets recorded by the HER and / or NRHE and 61 previously unrecorded heritage assets (as indicated by LiDAR, AP and historic mapping data) (***Figure 24.3*** and ***Appendix 24.1, Figure 4***).

112. 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.

[7] This figure excludes records relating to findspots and artefact scatters, which are illustrated on ***Figure 24.3*** and documented in ***Appendix 24.4***.

24.5.3.2.1 Sub-surface Archaeological Remains

113. Heritage assets within the proposed onshore development area that are considered to potentially represent surviving below ground archaeological remains have not yet been fully evaluated through non-intrusive (e.g. geophysical survey) or intrusive evaluation approaches. Features indicative of below ground archaeological remains, as indicated by data available and archaeologically assessed to date (see ***Appendix 24.1***), 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 structures or sites, which may no longer be extant as above ground remains but for which below ground remains may still be present. Features indicative of sub-surface archaeological remains are detailed in ***Appendix 24.1*** (section 3), where relevant. Based on the data presented in the ADBA, those archaeological sites / features 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 proposed onshore development area) are drawn through into the impact assessment and discussed, where relevant, in ***section 24.6***.

24.5.3.2.1.1 Archaeological Potential of the Proposed Onshore Development Area

114. The overall archaeological potential of the proposed onshore development area, as assessed and reported on in the ADBA prior to the archaeological assessment of geophysical survey data (***Appendix 24.1***), is considered to be medium, 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.

115. 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. Medieval features are also likely to readily identified through geophysical survey, with remains are unlikely to be of more than local

importance. However, there is a very high likelihood of burials within the area around the probable church of Buxlow (KND 009 / HA6).

24.5.3.2.1.2 Summary of Interim Geophysical Survey Results

116. A programme of onshore archaeological geophysical survey (detailed magnetometry) is currently ongoing (see ***section 24.4.2.1***) and will ultimately further help inform an understanding of the sub-surface archaeological potential of the proposed onshore development area, to be reported on fully within the ES chapter. A summary of preliminary results (***Appendix 24.2***) of the geophysical survey data acquired to date across the proposed onshore development area is provided below.

117. Ten broad AAAs have been identified across the proposed onshore development area, ranging from extensive areas of settlement of enclosure (i.e. concentrations of anomalies) or single clearly defined features. A summary of the AAAs identified to date is provided in ***Table 24.12*** below, with further information provided in ***Appendix 24.2***.

Table 24.12 Summary of AAAs Identified to date across the Proposed Onshore Development Area

AAA ID	Summary
AAA1 (*Appendix 24.2*, *ILLUS 1b, 2b* and *3b*)	Numerous conjoining linear anomalies forming a huge, complex, system of land division and enclosure. Includes a likely Bronze Age barrow. It is not certain at this stage whether this former system of land division is prehistoric (Bronze Age) origin or possible of later (Romano-British) date. This AAA comprises a *c.* 3km section of the proposed onshore development area, extending northwards from the point at which the cable route makes landfall (approximately 116ha).
AAA2 (*Appendix 24.2*, *ILLUS 1b, 2b* and *3b*)	A singular circular anomaly interpreted as the ploughed down remains of a Bronze Age barrow. Two discrete anomalies immediately north of the possible barrow could represent pits or areas of burning.
AAA3 (*Appendix 24.2*, *ILLUS 1b, 2b* and *3b*)	A large area of archaeological activity, including a number of enclosures. Includes a well defined rectangular enclosure, a D-shaped enclosure and other less well-defined enclosures.
AAA4 (*Appendix 24.2*, *ILLUS 1a, 2a* and *3a*)	An area in which three main foci of archaeological activity can be discerned. The first element includes a complex arrangement of linear anomalies indicating a ladder-like series of smaller enclosures and a plethora of discrete anomalies that may indicate an area of settlement. The second element is a trackway, clearly defined by two parallel ditches and a small circular anomaly. The third element comprises a disparate and discontinuous arrangement of anomalies, possibly representing an area of settlement activity.
AAA5 (*Appendix 24.2*, *ILLUS 1a, 2a*	An area comprising individual linear anomalies and two enclosures (one within the other). The enclosures are indicative of settlement, possibly of medieval date.

AAA ID	Summary
and *3a*)	
AAA6 (*Appendix 24.2*, *ILLUS 1a, 2a* and *3a*)	A cluster of small, sub-rectangular enclosures of possible Middle Bronze Age to early Roman date. The partial remains of a barrow is present some 100m to the north-east. Linear anomalies considered to represent the partial remains of larger enclosures are also present, as is a small isolated rectilinear enclosure.
AAA7 (*Appendix 24.2*, *ILLUS 1a, 2a* and *3a*)	A circular anomaly with a cross-shaped anomaly central within it, interpreted as a post-medieval windmill.
AAA8 (*Appendix 24.2*, *ILLUS 1a, 2a* and *3a*)	Three of four conjoining rectangular enclosures and other discontinuous linear anomalies.
AAA9 (*Appendix 24.2*, *ILLUS 1a, 2a* and *3a*)	A large area of archaeological activity (*c.* 45 ha) including a cluster of conjoining enclosures. The numerous discrete anomalies are considered to be indicative of occupation, possibly representing a roadside settlement of likely medieval date.
AAA10 (*Appendix 24.2*, *ILLUS 1a, 2a* and *3a*)	A small cluster of recti-linear enclosures, possibly dating from the later prehistoric through to the early post-Roman periods.

118. Those AAAs considered to be potentially vulnerable to direct (physical) impact as a result of the proposed East Anglia ONE North project are drawn through into the impact assessment and discussed, where relevant, in ***section 24.6***. However, the interpretations should be regarded as preliminary until all outstanding areas have been surveyed. As such, conclusions reached in ***section 24.6*** may be amended in light of further archaeological assessment of geophysical survey data, the results of which will be reported on within the ES chapter.

24.5.3.2.2 Above Ground Archaeological Remains and Heritage Assets

119. Features considered to represent above ground heritage assets within the proposed onshore development area are summarised ***Table 24.13***. Those summarised 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 24.1***). ***Table 24.13*** also takes 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.

Table 24.13 Possible Above Ground Heritage Assets within the Proposed Onshore Development Area

Source / ID	Definition
HER ADB 226	Aldeburgh / Leiston branch railway line. Old railway line. Now forms 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 extant line are located outside of the survey area.
HER ARG 025	Second World War (WWII) Coastal battery and associated features. Predominantly private inaccessible land. Features are outside of survey area. Earthworks and concrete walls visible along public access trackway to north of Dower house may form remains of ARG 025. Field boundary with outgrown coppiced trees also evident in woods north of Dower house. Two small modern huts visible on the OS map are also extant but decaying.
HER ARG 031	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.
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 north of Thorpeness Golf Course. Features are obscured by crop.
HER KND 003	Knodishall Common; Coldfair Green. Tumuli, one large and eight small in two rows running east/west. Area covered by dense gorse overgrowth. Tumuli not visible or accessible.
HER KND 010	Grove Wood - Ancient Woodlands. Most of Grove Wood is now covered by modern woodland planted in rows. A few ancient trees remain in the west of the wood, one of which has grown within the base of the sub-rectangular enclosure HA098. Outgrown coppiced trees are also evident in the west of Grove Wood.
HER LCS 203	Second World War 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

Source / ID	Definition
	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.

120. The heritage assets summarised in ***Table 24.13*** (and illustrated in ***Figure 24.3***) represent only those within the proposed 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 24.13*** should not be discounted.

121. In addition to those heritage assets summarised above, the proposed 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

122. Indirect (non-physical) impacts upon non-designated heritage assets may take place. As such, all non-designated heritage assets within the proposed onshore development area have also been considered as part of an ongoing heritage settings assessment. A high-level methodology of the settings assessment approach is outlined in ***section 24.5.2.3*** with further detail provided in ***Appendix 24.1***.

123. 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 should be considered as part of any

further assessment of these two Listed Buildings (see ***Figure 24.3*** and ***Appendix 24.1, Figures 4*** and ***8***):

- 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

124. 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 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 24.8***). 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.

125. The remaining non-designated heritage assets within the proposed onshore development area (identified to date) 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 (see ***section 24.4***) whereby a higher heritage 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.

126. 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 24.1***) are largely represented solely 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 of the features prove to be non-archaeological. Given this uncertainty, these potential heritage assets have also been assigned a precautionary heritage importance, depending on the nature of the asset in question, against which potential impacts have been assessed in ***section 24.6***.

127. The AAAs identified as part of the interim archaeological assessment of geophysical survey data (***Appendix 24.2***) include some areas of archaeological potential which have been interpreted as possibly representing settlements, funerary monuments or former systems of land division of prehistoric (Bronze Age) or later (Romano-British) date (AAA1, AAA2, AAA6 and AAA10). Based on information available to date, these areas of archaeological activity may be considered of perceived regional importance, although the potential for sub-surface archaeological remains of prehistoric remains which may be regarded of national importance should not be discounted. As a worst case scenario, these AAAs may therefore be considered to be of potentially high heritage importance, as a worst case scenario. Archaeological activity of possible medieval date, represented by AAA5 and AAA9 are considered likely to be of local or regional importance, thereby representing assets of low to medium (as a worse case scenario) heritage importance. The remains of the post-medieval windmill (AAA7) are likely to be of local importance, equating to low heritage importance. Remaining AAAs across the proposed onshore development area (AAA3, AAA4 and AAA8) are currently undated. Further information regarding their nature and origin will be reviewed in the ES chapter when the pre-consent geophysical survey campaign is at its completion. At this stage, in line with the precautionary approach, these features are assigned a precautionary medium heritage importance.

128. 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.

129. Any hedgerows identified as being associated with any of the six parish boundaries within the proposed onshore development area would be classed as “Important Hedgerows” under the Hedgerow Regulations. They are therefore identified as heritage assets of medium heritage importance.

130. 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 worst case scenario. Isolated discoveries of prehistoric archaeological material

discovered within secondary contexts would likely be regarded of medium heritage importance.

24.5.4 Historic Landscape Character and Historic Parish Boundaries

131. The HLC of the proposed onshore development area (***Appendix 24.1***, ***Figure 9***) 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 historic landscape character 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 proposed 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.

132. The proposed onshore development area crosses six historic parish boundaries (***Figure 24.3*** and ***Appendix 24.1***, ***Figure 16***). Any hedgerows associated with, or representing, these boundaries would 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 Proposed Onshore Development Area

ID	Description	Route / Location within the proposed onshore development area	Heritage Importance
PB1	Eastern edge of Friston and western edge of Knodishall	North/south between Clouting's 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 trackbed and Aldeburgh Road, across The Walks just south of Forty Acre Belt.	Medium
PB6	Aldringham with Thorpe and	Runs east/west across a field between Square	Medium

ID	Description	Route / Location within the proposed onshore development area	Heritage Importance
	Leiston (eastern)	Covert and Dower House.	

24.5.5 Anticipated Trends in Baseline Conditions

133. The existing environment for onshore archaeology and cultural heritage has been shaped by a combination of factors, predominantly consisting of previous land use and onshore development activity.

134. Land use in the proposed 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 proposed 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 'ploughed out' (e.g. former WWII military structures / areas, former field boundaries – see ***Appendix 24.1***). The trend of agricultural activities occurring across the proposed onshore development area is likely to continue, thereby potentially resulting in the gradual degradation and / or disturbance of sub-surface archaeological remains. Although 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.

135. 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 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 substantial harm.

136. 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.

137. 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.

138. The historic environment is also vulnerable to the effects of climate change[8]. 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.

139. Elements of climate change considered to be a particular relevance to the proposed onshore development area include those associated with sea level changes, erosion and the effects of storm waves, which have the potential to

[8] https://historicengland.org.uk/research/current/threats/heritage-climate-change-environment/what-effects/

damage and de-stabilise coastal heritage assets. Evidence of cliff erosion was noted at the eastern extent of the proposed 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 24.1***). 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 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.

140. The baseline conditions for onshore 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 proposed 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 onshore 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

141. This section outlines potential impacts as a result of the proposed East Anglia ONE North project and their significance, using the assessment methodology described in ***section 24.4*** and ***Chapter 5 EIA Methodology***.

142. A range of potential impacts may occur to onshore archaeology and cultural heritage assets as a result 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.

143. 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 directly impact archaeological remains (heritage assets).

144. Indirect (non-physical) impacts on the historic environment, as stated in NPS EN-3 (DECC 2011b: 67), include effects on the setting of heritage assets. Indirect impacts upon 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 impacts upon the setting of heritage assets may arise 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 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.

145. At this stage of enquiry, the impact assessment as presented in this PEIR chapter assumes that activities associated with construction may theoretically occur anywhere within the proposed onshore development area. Although the proposed footprint of the National Grid substation and onshore substation are considered as part of this assessment, the assessment outline below includes the possibility for groundworks to occur within the remaining onshore substation location (e.g. as potential construction consolidation sites etc). On this basis, and at this stage of enquiry, the potential impacts outlined below are considered within the proposed onshore development area as a whole. Specific interactions with the onshore historic environment and particular project elements will be examined and assessed as part of the later ES chapter.

24.6.1 Potential Impacts during Construction

146. Any excavations relating to site preparation or 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.

147. In addition, the temporary presence of the construction works themselves could affect the setting of heritage assets, both designated and non-designated and elements of the historic landscape.

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

148. 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 proposed 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 corridor;
- 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).

149. Any adverse 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 impacts to the fabric or physical setting can represent a total loss of an asset, or part of it, and the character, composition or attributes of the asset may be fundamentally changed or lost from the site altogether.

150. On this basis, direct impacts on buried archaeological remains are generally considered to be of high magnitude. However, the extent of any impact will 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 area of the asset subject to impact. As such, a reduced magnitude of effect 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. The magnitude of effect of direct impacts on buried archaeological remains during the construction phase could therefore range from negligible to high.

151. A staged programme of assessment has been undertaken with a view to building upon an understanding of potential archaeological remains in the study areas and more specifically within the proposed onshore development area. To date, this has included the compilation of the ADBA (***Appendix 24.1***), which includes and is informed by:

- A review of various records, data and information sources;
- An aerial photographic and LiDAR data assessment;
- An initial heritage settings assessment;
- A field reconnaissance survey; and
- The assessment of historic map resources.

152. Heritage assets within the proposed onshore development area that are considered to potentially represent surviving below ground archaeological remains have not yet been fully evaluated through non-intrusive (e.g. geophysical survey) or intrusive evaluation approaches. A programme of onshore archaeological geophysical survey (detailed magnetometry) has been undertaken and will ultimately further help inform an understanding of the sub-surface archaeological potential within the proposed onshore development area (see ***section 24.4.2.1***). The preliminary results of this assessment (***Appendix 24.2***) have been used to develop the baseline account of the proposed onshore development area so that many 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 reduce or off-set any significant impacts identified (or those which have the potential to occur). This process will be progressed and taken forward further post-PEIR, with results of the geophysical survey assessment reported on in full and fully integrated into the impact assessment in the ES chapter, alongside any other priority evaluation works to be fast-tracked and undertaken prior to the DCO submission stage.

24.6.1.1.1 Impacts Prior To Mitigation

24.6.1.1.1.1 Landfall Location

153. Construction activities within the landfall location that have the potential to directly impact buried archaeological remains are those associated with HDD works and groundworks associated with transition bay installation (up to four drills including two transition bays for the proposed East Anglia ONE North project).

154. Data available and assessed to date within the landfall location indicates a predominance of features associated with the coastal defence network of the

two World Wars (particularly those of the Second World War) (ARG 031, ARG 032, ARG 033, ARG 034, ARG 052 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*** *and* ***Appendix 24.1****,* ***Figure 4***), a number of which are considered to represent either bomb craters of Second World War date or perhaps more predominant are historic extraction pits. A review of historic cartographic sources has also revealed a number of features thought to represent by-products of modern agricultural practice (e.g. possible field drains HA61 and HA65, illustrated in ***Figure 24.3*** *and* ***Appendix 24.1****,* ***Figure 4***). 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*** *and* ***Appendix 24.1****,* ***Figure 4***). 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 heritage importance.

155. 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. HA65 and HA69) (***Figure 24.3*** *and* ***Appendix 24.1****,* ***Figure 4***). Given the quantity of known extraction sites in the area, it is expected that many of these are likely to also 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 monuments should not be completely discounted. Features of this nature would likely be considered of medium or high heritage importance.

156. The landfall location also intersects AAA1, identified in geophysical survey data acquired across the proposed onshore development area and interpreted as a former system of land division of possible prehistoric (Bronze Age) or later (Romano-British) date. This AAA has been assigned a preliminary medium-high heritage importance.

157. Without further investigation, sub-surface archaeological remains within the landfall location should be regarded as including heritage assets with a potentially high heritage importance (as a worst case scenario). Without detailed design parameters and in the absence of site specific / additional mitigation, it should be considered that all direct impacts to possible below ground archaeological remains as part of construction works at the landfall could result in a high negative magnitude of effect, thereby resulting in a **major adverse** significance impact based upon a worst case scenario.

24.6.1.1.1.2 Onshore Cable Corridor

158. Construction activities in the onshore cable corridor that have the potential to directly 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.

159. 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, ARG027-9, LCS 203, LCS 206, LCS 213, NRHE 1478561 and NRHE 1478677) (***Figure 24.3*** and ***Appendix 24.1***, ***Figure 4***), with the potential for sub-surface remains (foundations) to exist within the onshore cable corridor. Quarry pits (e.g. ARG 022, LCS 118 and HA58) and undated cropmark features (possible former field boundaries and undated enclosures e.g. LCS 210, LCS 214 and LCS 216) 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, HA24-7, HA33, HA51, HA53, HA59 and HA60) (***Figure 24.3*** *and* ***Appendix 24.1***, ***Figure 4***). Sub-surface archaeological remains may also exist in the cable corridor in association with former structures (e.g. HA29) as indicated by AP / LiDAR and historic mapping data (***Figure 24.3*** *and* ***Appendix 24.1***, ***Figure 4***). Based on information available to date, the features outlined above are considered likely to be of low heritage importance.

160. Notable features within the onshore cable corridor (see ***Figure 24.3*** and ***Appendix 24.1, Figure 4***) include fragmentary cropmarks of a possible medieval settlement to the north of St Andrew's Church, Aldringham cum Thorpe circular (ARG 073) which may be considered of medium heritage importance. A scatter of medieval finds has been discovered in the vicinity of this feature (ARG 019). Cropmarks evident in the fields to the northeast of Church Farm, Knodishall (HA6) have also been identified within the cable corridor. HA6 is thought to represent the remains of the chapel site recorded in the HER as 'KND 009'. KND 009 is approximately 100m to the west of HA6 (mapped are marginally intersecting the southernmost extent of the National Grid substation and onshore substation location). 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. HA6 is therefore considered to be of medium heritage importance.

161. 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*** *and*

Appendix 24.1, ***Figure 4***). Should these features represent prehistoric funerary monuments, they would likely be considered of medium or high heritage importance as a worst case scenario (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. 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, HA10, HA12-3, HA15, HA23, HA31, HA32, HA36, HA44-5, HA49, HA54, HA55) (***Figure 24.3*** *and* ***Appendix 24.1***, ***Figure 4***). Should any of these features be identified as representing prehistoric funerary monuments, they too would likely be considered of medium or high heritage importance as a worst case scenario.

162. The onshore cable corridor also intersects AAA1-8 and AAA10, identified in geophysical survey data acquired across the proposed onshore development area. A number of these features / concentration of features are interpreted as being of possible prehistoric (Bronze Age) or later (Romano-British) date, comprising former system of land division (AAA1), a Bronze Age barrow (AAA2), a series of enclosures, linear anomalies and the partial remains of a barrow (AAA6) and a small cluster of recti-linear enclosures (AAA10). These AAAs have been assigned a preliminary medium to high (as a worst case scenario) heritage importance. Other features include a possible medieval settlement (AAA5), assigned a preliminary medium heritage importance, a post-medieval windmill (AAA7) assigned a low heritage importance and a number of currently undated features / concentrations of features (AAA3, AAA4, AAA7 and AAA8). These undated features have been assigned a cautionary medium heritage importance until more information comes to light.

163. Without further investigation, sub-surface archaeological remains within the onshore cable corridor should be regarded as including heritage assets with a potentially high heritage importance (as a worst case scenario). Without detailed design parameters (onshore cable route and associated works – see ***Chapter 6 Project Description***) and in the absence of site specific / additional mitigation, it should be considered that all direct impacts to possible below ground archaeological remains as part of construction works within the onshore cable corridor could result in a high negative magnitude of effect, thereby resulting in a **major adverse** significance impact based upon a worst case scenario.

24.6.1.1.1.3 National Grid Substation and Onshore Substation

164. Construction activities relating to the National Grid substation and onshore substation in the onshore substation location that have the potential to directly impact buried archaeological remains are those associated with groundworks

relating to substation construction, pylon relocation, sealing end / gantries and associated compounds.

165. Based on data available to date, notable features in which potential sub-surface archaeological remains may be present within the onshore substation location 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*** and ***Appendix 24.1, Figure 4***). The true location of the former chapel may be 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. 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), the possible former remains of a post-medieval brickwork (KND 016) and an enclosed area formerly containing four dwellings that are now demolished (KND 015). Other features within the onshore substation location include features evident on LiDAR and AP data in the form of hollows (HA1, HA2 and HA5), linear / curvilinear features and a former field boundaries (HA3) and the location of former buildings (HA4) (see ***Figure 24.4*** and ***Appendix 24.1, Figure 4***). These features are likely to be of low-medium heritage importance, as a worst case scenario. Of those features identified, only HA3 intersects the parameters of the onshore substation and National Grid substation footprints. However, as the associated work areas are yet to be defined, this impact assessment has been undertaken on the basis that groundworks may theoretically occur anywhere within the onshore substation location. As such, the potential for these heritage assets to be subject to direct impact is not currently discounted.

166. The National Grid substation also intersects AAA9, identified in geophysical survey data acquired across the proposed onshore development area. AAA9 is identified as a large area of archaeological activity, interpreted as a possible roadside settlement of likely medieval date. This area has been assigned a preliminary medium heritage importance.

167. 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 heritage importance (as a worst case scenario). Without detailed design parameters and in the absence of site specific / additional mitigation, it should be considered that all direct impacts to possible below ground archaeological remains as part of construction works within the onshore substation and National Grid substation

locations could result in a high negative magnitude of effect, thereby resulting in a **major adverse** significance impact, based upon a worst case scenario.

24.6.1.1.2 Additional Mitigation Measures

168. 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 commitment ensures that, when and where available, geophysical survey data will input directly into the iterative design process so that potential sub-surface archaeological remains (in particular suspected features of likely high heritage importance or concentrated areas of complex archaeological features) can be avoided, wherever possible within the confines of engineering and other environmental constraints. 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. The presence (or potential) presence of this feature will feed into siting considerations and discussions as the proposed East Anglia ONE North project progresses.

169. As part of the embedded mitigation, the proposed East Anglia ONE North project has also committed to undertake additional programmes of survey and evaluation (to be referred to as initial informative stages of mitigation work) which, of relevance to sub-surface archaeological remains, may include any outstanding geophysical survey, trial trenching (post consent), targeted field walking and metal detecting. This commitment will be outlined as part of a project-specific Outline WSI, which will include a range of likely mitigation options and responses to be utilised under various scenarios, to be prepared in agreement with SCCAS and HE. The initial informative stages of mitigation work may indicate the presence of previously unknown buried archaeology (and further verify previously known / anticipated buried site remains as indicated by the previous non-intrusive survey methods), enabling it to be safe-guarded by means of mitigating any impacts in a manner that is proportionate to the significance of the remains present.

170. 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.);
- Set-piece (open-area) Excavation: including subsequent post-excavation assessment, and analysis, publication and archiving;

- Strip, Map and Record (or Sample) 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).

171. 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 undertaken to date.

24.6.1.1.3 Impacts Following Mitigation

172. 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 significance will be reduced or offset to levels considered non-significant in EIA terms (i.e. anticipated in the majority of cases to be no worse than **minor adverse**).

173. 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 effect may be reduced depending on the extent of the site / feature in question and the degree to which preservation *in situ* has been enacted. 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 effects 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 definitions outlined in ***Table 24.11*** in relation to minor impact significance. The application of appropriate and proportionate mitigation measures will be developed as the proposed East Anglia ONE North project progresses as more information comers to light, following the acquisition of survey data as part of ongoing and forthcoming evaluation approaches (and / or the initial informative stages of mitigation – see ***section 24.3.3.1***).

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.)

174. Impacts resulting in potential effects as part of construction works are those associated with intrusive groundworks (see Construction Impact (1), ***section 24.6.1.1***). Any adverse impacts may be permanent and irreversible in nature. In the absence of mitigation, direct impacts on above ground archaeological remains are therefore generally considered to be of high magnitude. However, the extent of any impact will 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 area of the asset subject to impact. As such, a reduced magnitude of effect 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 to be unlikely or limited. The magnitude of effect of direct impacts on above ground archaeological remains / heritage assets during the construction phase could therefore range from negligible to high.

175. 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 proposed onshore development area. This change to the HLC arising from the potential loss of above ground features is discussed below.

24.6.1.2.1 Impacts Prior To Mitigation

24.6.1.2.1.1 Landfall Location

176. Construction activities within the landfall location that have the potential to directly impact above ground archaeological remains and heritage assets are those associated with HDD works and groundworks associated with transition bay installation.

177. Data available and assessed to date within the landfall location indicates the presence of a number of above ground heritage assets (see ***Figure 24.3*** and ***Appendix 24.1, Figure 4***), as follows:

- WWII Strongpoint and Diver Battery (ARG 031): diver battery / pill box extant in scrubland although associated earthworks are not visible;
- WWII Two Strongpoints (ARG 032): Possibly visible from beachfront as decayed metal eroding from cliff face and concrete collapsed onto beachfront;

- WWII Chain home (ARG 033): ceramic building material and concrete rubble eroding from top of cliff face may be associated with this heritage asset;
- WWII Strong point and Diver battery (ARG 034): ceramic building material and concrete rubble eroding from top of cliff face may be associated with this heritage asset;
- WWII coastal defences (ARG 052): eroded re-enforced concrete lumps located on beach; and
- Earthworks of World War Two anti-glider ditches north of Thorpeness Golf Course (ARG 070): Features are obscured by crop.

178. Based on information available to date, these features will likely be regarded as heritage assets of low-medium heritage importance (medium heritage importance as a worst case scenario). Without detailed design parameters and in the absence of site specific / additional mitigation, it should be considered that all direct impacts to possible above ground archaeological remains and heritage assets, as part of construction works at the landfall, could result in a high negative magnitude of effect, thereby resulting in a **major adverse** significance impact, based on a worst case scenario.

179. With regards to the HLC (see ***Appendix 24.1, Figure 9***), the managed wetland at the eastern extent of the proposed onshore development area will experience a temporary level of change to HLC during construction.

24.6.1.2.1.2 Onshore Cable Corridor

180. Construction activities in the onshore cable corridor that have the potential to directly impact above ground archaeological remains and heritage assets 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.

181. 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*** and ***Appendix 24.1, Figure 4***), as follows:

- Aldeburgh / Leiston branch railway line (ADB 226): 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 survey area;
- WWII Coastal battery and associated features (ARG 025): Earthworks and concrete walls visible along public access trackway;
- WWII Strongpoint and Diver Battery (ARG 031): diver battery / pill box extant in scrubland although associated earthworks are not visible.

- Knodishall Common Tumuli, one large and eight small in two rows running east/west (KND 003): Area covered by dense gorse overgrowth - tumuli not visible or accessible
- Grove Wood - Ancient Woodlands (KND 010): Most of Grove Wood is now covered by modern woodland planted in rows;
- WWII training area and / or strongpoint (LCS 203): Although much of the site was dismantled, some earthworks are thought to still survive;
- WWII Diver battery (LCS 213): 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 this area obscured by overgrowth); and
- Linear and rectilinear earthworks of unknown date (LCS 216): 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.

182. Based on information available to date, these features will likely be regarded as heritage assets of low-high heritage importance (high heritage importance as a worst case scenario). Without detailed design parameters and in the absence of site specific / additional mitigation, it should be considered that all direct impacts to possible above ground archaeological remains and heritage assets, as part of construction works at the landfall, could result in a high negative magnitude of effect, thereby resulting in a **major** adverse significance impact, based on a worst case scenario.

183. 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 (see ***Appendix 24.1, Figure 9***). The onshore cable corridor also includes five parish boundaries (PB2-6) (see ***Figure 24.3*** and ***Appendix 24.1, Figure 16***). Any hedgerows associated with these boundaries would be classed as “Important Hedgerows” and are therefore considered to be heritage assets of medium heritage importance. In the absence of mitigation, cable installation works have the potential to result in a medium adverse magnitude upon any such hedgerows (where present), resulting in a **moderate adverse** impact significance, as a worst case scenario.

24.6.1.2.1.3 National Grid Substation and Onshore Substation

184. Construction activities relating to the onshore substation and National Grid substation location that have the potential to directly 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.

185. As part of this initial 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 of the study area.

186. The presence of the onshore project substation will represent a permanent / long-term change to the HLC to the west of Coldfair Green 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 ***Appendix 24.1, Figure 9***).

187. The onshore substation and National Grid substation location also includes one parish boundary (PB1) (***Appendix 24.1, Figure 16***). Any hedgerows associated with this boundary would be classed as "Important Hedgerows" and are therefore considered to be heritage assets of medium heritage importance. In the absence of mitigation, groundworks have the potential to result in a medium adverse magnitude upon any such hedgerows (where present), resulting in a **moderate adverse** impact significance, as a worst case scenario.

188. No invasive groundworks are anticipated in the location of the Grade II Listed Little Moor Farm (1215743) (no impact).

24.6.1.2.2 Additional Mitigation

189. 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 will be sought for the avoidance of above ground heritage assets, ensuring that cultural heritage considerations inform and play an active role in ongoing design decisions, within the confines of other environmental and engineering constraints.

190. As part of the embedded mitigation, the proposed East Anglia ONE North project has also committed to undertake additional programmes of survey and evaluation (to be referred to as initial informative stages of mitigation work). This commitment will be outlined as part of a project-specific Outline WSI, which will include a range of likely mitigation options and responses to be utilised under various scenarios, to be prepared in agreement with SCCAS and HE.

191. Earthwork condition surveys and built heritage / historic building surveys and recording are two approaches that are likely to be implemented at targeted locations as part of post-consent initial informative stages of mitigation. This may be followed by additional backfilling, reinstatement and conservation / restoration requirements, where required on a case-by-case basis.

192. 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.

193. 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 assessment undertaken to date.

24.6.1.2.3 Impacts Following Mitigation

194. 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 impact significance will be reduced or offset to levels considered negligible in EIA terms (i.e. anticipated in the majority of cases to be no worse than **minor adverse**).

195. The preferred and optimum mitigation measure is preservation *in situ*, wherever possible. By avoiding above ground archaeology and cultural heritage assets, either largely or in their entirety (as indicated by existing and available data), the magnitude of effect may be reduced depending on the extent of the heritage asset / feature in question and the degree to which preservation *in situ* has been enacted. Alternatively, where avoidance is not possible, significant impacts upon above ground archaeology and cultural heritage assets 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. Although preservation by record cannot be considered to reduce the magnitude of effects given the physical loss of a given heritage asset / feature, the acquisition of a robust archaeological record of a heritage asset / 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 definitions

outlined in ***Table 24.11*** in relation to minor impact significance. The application of appropriate and proportionate mitigation measures will be developed as the proposed East Anglia ONE North project progresses as more information is available as part of ongoing and forthcoming evaluation approaches (and / or the initial informative stages of mitigation – see ***section 24.3.3.1***).

24.6.1.3 Impact 3: Indirect (non-physical) Impact on the Setting of Heritage Assets (both Designated and Non-Designated)

196. 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. Indirect impacts upon 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 proposed onshore development area. The sight, sound, any dust created, and even smell, during the construction phase has the potential to indirectly (non-physical) impact heritage assets and their settings.

24.6.1.3.1 Impacts Prior to Mitigation

197. As part of the initial heritage settings assessment undertaken to date (see ***Appendix 24.1***, ***section 3.8***) 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. Indirect (non-physical) impacts upon the setting of heritage asserts during the construction phase have therefore been excluded from further consideration (**no impact**).

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

198. It is possible that elements of the proposed East Anglia ONE North project may affect below ground deposits, both within the proposed 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 (see Construction Impact (1), ***section 24.6.1.1***).

199. As the presence / absence, nature and extent of deposits of geoarchaeological and palaeoenvironmental interest is currently unknown within the proposed onshore development area, at this stage of enquiry it is not possible to identify potential impacts according to the various elements of construction. As such, the following worst case scenario 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

200. Potential geoarchaeological and / or palaeoenvironmental remains within the proposed 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 ***Appendix 24.1, Figure 4***). Both features are within the cable corridor, with HA26 to the south-east of Knodishall Common and HA44 to the north of Aldringham Common. It is further notable that the proposed onshore development area is part of a larger coastal region considered to be internationally important for Lower Palaeolithic archaeology, with deposits identified as Cromer Forest Bed Formation having been encountered at Happisburgh (Norfolk) and Pakefield (Suffolk, *c.* 30km north of the proposed project), within which the earliest evidence for prehistoric hominin activity in the UK has been discovered (Parfitt et al. 2010; Parfitt et al. 2005).

201. 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 proposed onshore development area.

202. In the absence of further information, a precautionary high heritage importance has been assigned to potential palaeoenvironmental and geoarchaeological remains under a worst case scenario. Without detailed design parameters, and in the absence of site specific / additional mitigation, it should be considered that all direct impacts to geoarchaeological and palaeoenvironmental remains as part of construction works, could result in a high negative magnitude of effect, thereby resulting in a **major** adverse significance impact based on a worst case scenario.

24.6.1.4.2 Additional Mitigation Measures

203. 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 initial informative stages of mitigation work). This commitment will be outlined as part of a project-specific Outline WSI, which will include a range of likely mitigation options and responses to be utilised under various scenarios, to be prepared in agreement with SCCAS and HE.

204. 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 geo-archaeological 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 commitments in the Outline WSI.

24.6.1.4.3 Impacts Following Mitigation

205. 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 the residual impact significance will be reduced or offset to levels considered non-significant in EIA terms (i.e. anticipated in the majority of cases to be no worse than **minor adverse**).

206. 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 geo-archaeological interest so that impacts upon deposits that may contain prehistoric archaeological material (where present) can be mitigated in a manner that is both appropriate and proportionate to the heritage significance 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. As discussed in ***section 24.6.1.1.3,*** avoiding sub-surface archaeological remains (sites / features), either largely or in their entirety (as indicated by existing and available data), the magnitude of effect may be reduced depending on the extent of the site / feature in question and the degree to which preservation *in situ* has been enacted. 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 effects 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 definitions outlined in ***Table 24.11*** in relation to minor impact significance. The application of appropriate and proportionate mitigation measures will be developed as the proposed East Anglia ONE North project progresses as more information comers to light as part of ongoing and forthcoming evaluation approaches (and / or the initial informative stages of mitigation – see ***section 24.3.3***).

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

207. 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 effect upon site preservation.

24.6.1.5.1 Impacts Prior to Mitigation

208. 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.

209. 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.

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

24.6.2 Potential Impacts during Operation

211. 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, it is proposed that direct impacts to buried archaeology during operation be scoped out of further assessment.

212. The presence of above ground infrastructure could, however, have an impact on the setting of heritage assets as a result 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 on the Setting of Heritage Assets (both Designated and Non-Designated)

213. The presence of the above ground onshore substation and National Grid substation during the operational phase may result in an indirect (non-physical) impact upon the setting of heritage assets (both designated and non-designated).

214. Given that much of the proposed East Anglia ONE North project comprises underground elements that would not lead to more than temporary changes in settings during construction works, these areas of work (i.e. landfall location and the majority of the onshore cable corridor) can be identified and excluded from further consideration. Consideration of setting during the operation of the proposed project is therefore addressed in relation to the predicted visual change of the proposed East Anglia ONE North project and confined to the cable ducts in the vicinity of Aldringham Court and the onshore substation and National Grid substation.

215. As noted earlier, further work is being progressed on the settings assessment outside the detail included in this PEIR chapter. This includes a review of the

proposed landscape mitigation plan (see ***Figure 29.11*** within ***Chapter 29 Landscape and Visual Impact***) against the identified designated heritage assets, as described in this chapter and associated appendices, and the identified non-designated heritage assets. Additionally, cultural heritage specific viewpoint locations are being determined with respect to the setting of heritage assets. Further details on this work, and a full settings assessment will be provided in the Environmental Statement submitted with the East Anglia ONE North DCO application.

24.6.2.1.1 Impacts Prior to Mitigation

24.6.2.1.1.1 Onshore Cable Corridor

216. Indirect (non-physical) impact upon the setting of heritage assets arising as a result of the onshore cable corridor may occur upon Aldringham Court (1393143, Grade II) (***Figure 24.2*** and ***Appendix 24.1, Figure 5***). A preliminary statement, describing how setting contributes to the heritage significance of Aldringham Court is included within the ADBA (***Appendix 24.1***) and summarised below.

217. Aldringham Court is a country house, built in 1912-14 to a design in a contemporary Edwardian style by local architect Cecil Lay. The heritage significance of this asset (and the justification for its designation) relates primarily to its architectural and historic interest as an important example of work by a well-known local architect. The setting of the house is provided by grounds that extend for approximately 300m north to south and 150m east-west, with a mixed tree belt planted along the northern, eastern and part of the southern boundary to enclose the grounds, screening the house from public roads. A tree line was also established along the southern part of the western boundary and three clumps of conifers planted in the open ground to the south of the house, with one on the north side. Site visits have confirmed that this planting scheme largely survives, but in a very poor condition. To the extent that the existing vegetation still reflects Lay's design of the grounds, it makes some contribution to the heritage significance of the house, allowing it to be experienced in a setting that conveys the architect's ideas. The cable route would require the cutting and maintenance of a 16.1m-wide swathe through the grounds to the south of the house. This could diminish the contribution that setting makes to the heritage significance of the house. On this basis, there is the potential for significant impacts to occur as a result of potential changes to the setting of this heritage asset.

218. It is not possible at this stage to reach definitive conclusions regarding the magnitude of any harm that these assets would experience, primarily because the design of the onshore substation and National Grid infrastructure has not yet been finalised and the potential for mitigation remains to be fully consulted

upon via PEIR. However, the analysis already undertaken (see ***Appendix 24.1***) of significance and likely change in setting for these assets is sufficient to conclude that any harm would be 'less than substantial'.

219. Aldringham Court (1393143, Grade II) has therefore been identified as requiring further assessment. The assessment undertaken to date as presented in the ADBA (***Appendix 24.1***) addresses Step 1 ('Identify which heritage assets and their settings are affected') of the Historic England guidance on the *Setting of Heritage Assets* ('GPA3', Historic England 2017). It also begins to address Step 2 ('Assess the degree to which these settings make a contribution to the significance of the heritage asset(s) or allow significance to be appreciated') and Step 3 ('Assess the effects of the proposed development, whether beneficial or harmful, on the significance or on the ability to appreciate it'). This settings assessment will be progressed between PEIR and ES as the proposed East Anglia ONE North project design is refined, with a view to fully assessing the potential for indirect (non-physical) impacts to occur on Aldringham Court and to inform decisions regarding appropriate mitigation strategies (where necessary) as part of Step 4 of GPA3 ('Explore ways to maximise enhancement and avoid or minimise harm').

24.6.2.1.1.2 National Grid Substation and Onshore Substation

220. The following designated heritage assets may be subject to significant impacts (in EIA terms) as a result of potential changes in their setting due to the presence of the onshore substation and National Grid substation (see ***Figure 24.2*** and ***Appendix 24.1, Figure 7***):

- Church of St Mary, Friston (1287864, Grade II*);
- Little Moor Farm (1215743, Grade II);
- Woodside Farmhouse (1215744, Grade II);
- High House Farm (1216049, Grade II); and
- Friston House (1216066, Grade II).

221. Preliminary statements, describing how setting contributes to the heritage significance of each of the heritage assets listed above, is included within the ADBA (***Appendix 24.1***) and summarised below.

222. The Church of St Mary, Friston (1287864, Grade II*) is located in a rural setting on top of a slight rise at the northern edge of the village of Friston. The significance of this asset (and the reason for its designation as a Grade II* Listed Building) primarily lies in the medieval fabric of the church, which has considerable architectural, archaeological, artistic and historic interest. Setting contributes to the significance of this church on three different scales: (1) the

immediate setting is provided by the churchyard, which creates an historically appropriate space around the church from which the architecture of the building can be appreciated at close range; (2) the church can also be appreciated as an important building within the village of Friston, reinforcing the historic interest of the church as a component of this historic settlement; and (3) the church can be experienced as a prominent feature in views from the surrounding landscape, with such views allowing the church to be appreciated in its historic role as the spiritual and physical focal point of its parish. The substations would be prominent in the foreground or even obstruct some views towards Friston church from the north and would also appear in the background of some views from the south, potentially affecting the contribution that setting makes to heritage significance.

223. Little Moor Farm (1215743, Grade II) is located 1km to the north of Friston. The heritage significance of this asset (and the justification for its designation) lies primarily in the architectural and archaeological interest of its fabric, as a well-preserved example of the local vernacular building tradition. This former farmhouse is still located within farmland and this setting contributes positively to its significance through its functional and historic link to the building as a farmhouse, adding further historic interest to the asset.

224. Woodside Farmhouse (1215744, Grade II) is located on the northern edge of Friston village. The heritage significance of this asset (and the justification for its designated) lies primarily in the architectural and archaeological interest of its fabric, as a well-preserved example of the local vernacular building tradition. This former farmhouse is still located adjacent to farmland and this setting contributes positively to its significance through its functional and historic link to the building as a farmhouse, adding further historic interest to the asset.

225. High House Farm (1216049, Grade II) is located 1km to the north of Friston. The heritage significance of this asset (and the justification for its designated) lies primarily in the architectural and archaeological interest of its fabric, as a well-preserved example of the local vernacular building tradition. This former farmhouse is still located within farmland and this setting contributes positively to its significance through its functional and historic link to the building as a farmhouse, adding further historic interest to the asset.

226. The substations would be prominent features in the setting of Little Moor Farm, Woodside Farmhouse and High House Farm at a range of less than 500m. This change would impact on the rural agricultural character of their setting, potentially diminishing the contribution that the setting makes to the heritage significance of these heritage assets.

227. Friston House (1216066, Grade II) is located immediately to the north-west of Friston on the Saxmundham Road. The heritage significance of this asset (the primary reason for its designation) relates to architectural interest in the house itself. The setting of Friston House comprises landscaped grounds. The overall layout of house and grounds is believed to match the original early 19th century design of the grounds. It was designed to be enjoyed without any reference to the wider landscape and this arrangement survives to the present day. This intact designed setting makes a positive contribution to the heritage significance of Friston House. Friston House could be located approximately 500m to the south-west of the substations. The ZTV predicts visibility of the substations within the grounds. The appearance of the substations in views within the grounds could harm the significance of this asset; it is therefore concluded that further analysis would be required to fully investigate this potential.

228. The five designated heritage assets outlined above have been identified as requiring further assessment. As a number of 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, the following non-designated heritage assets (***Figure 24.3*** and ***Appendix 24.1, Figure 4***) also warrant consideration with respect to potential indirect impacts upon setting as part of any further assessment of these two Listed Buildings:

- 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.

229. It is not possible at this stage to reach definitive conclusions regarding the magnitude of any harm that these assets would experience, primarily because the design of the onshore substation and National Grid infrastructure has not yet been finalised and the potential for mitigation remains to be fully consulted upon via PEIR. However, the analysis already undertaken (see ***Appendix 24.1***) of significance and likely change in setting for these assets is sufficient to conclude that any harm would be 'less than substantial'.

230. The assessment undertaken to date as presented in the ADBA (***Appendix 24.1***) addresses Step 1 ('Identify which heritage assets and their settings are affected') of the Historic England guidance on the *Setting of Heritage Assets*

('GPA3', Historic England 2017). It also begins to address Step 2 ('Assess the degree to which these settings make a contribution to the significance of the heritage asset(s) or allow significance to be appreciated') and Step 3 ('Assess the effects of the proposed development, whether beneficial or harmful, on the significance or on the ability to appreciate it'). This settings assessment will be progressed between PEIR and ES as the proposed East Anglia ONE North project design is refined, with a view to fully assessing the potential for indirect (non-physical) impacts to occur on the heritage assets outlined above and to inform decisions regarding appropriate mitigation strategies (where necessary) as part of Step 4 of GPA3 ('Explore ways to maximise enhancement and avoid or minimise harm'). This is likely to include at least five (possibly up to ten) heritage specific viewpoints being captured in the next round of LVIA winter photography, in collaboration with the LVIA consultants, and photomontages drawn up for discussion with the HSG at the next ETG meeting.

24.6.2.1.2 Additional Mitigation

231. As part of the embedded mitigation, the proposed East Anglia ONE North project makes a commitment to incorporate effective, appropriate and suitable landscape screening and planting (where considered necessary) as part of the ongoing project design. The potential for these measures to reduce any indirect impacts upon the settings of heritage assets to a level that is considered to be of minor or negligible significance in EIA terms will be explored as the proposed East Anglia ONE North project progresses. Other additional mitigation measures which may be subject to consideration with respect to reducing impact significance with regards to setting include the possibility of off-site mitigation planting, opportunities for which will be explored and agreed in principle pre-submission of the DCO application. Specific screening and planting measures, as and where identified as being required, will be discussed further with SCCAS and HE and detailed further within the ES.

24.6.2.1.3 Impacts Following Mitigation

232. The application of the mitigation measures outlined in ***section 24.6.2.1.2*** cannot at this stage feed into the impact assessment as presented in this PEIR chapter until the settings assessment is at a point of completion and reported on as part of the ES. The heritage assets considered to warrant further heritage setting consideration outlined above will be further assessed, in discussion with SPR and the HSG, following the HE guidance and the stepped approach outlined within. The assessment will be supplemented by further site visits / re-visits and available LVIA-toolkits (e.g. ZTVs, photomontages for heritage specific viewpoints) in specific relation to the more refined proposed project boundary and associated infrastructure (when defined), that will be assessed as part of the ES.

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

233. 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

234. 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 effects 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 will be **no impact** 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

235. 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. However, the onshore substation will likely be removed and be reused or recycled. It is expected that the onshore cables will be removed and recycled, with the transition bays and cable ducts (where used) left *in situ*. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. A decommissioning plan will be provided. As such, 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

236. The East Anglia TWO offshore windfarm project (the proposed East Anglia TWO project) is also in the pre-application. The proposed East Anglia TWO project will have a separate DCO application but is working to the same programme of submission as the proposed East Anglia ONE North project. The

two projects will share the same landfall and cable route and the two onshore substations will be co-located feed into the same National Grid substation.

237. The proposed East Anglia ONE North project CIA will therefore initially consider the cumulative impact with only the East Anglia ONE North project.

238. 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 with a construction gap.

239. 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 are in close proximity to the proposed East Anglia ONE North project (***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***.

240. Full assessment of scenario 1 and scenario 2 can be found in ***Appendix 24.5***. This assessment found that scenario 2 represented the worst case impacts for onshore archaeology and cultural heritage. A summary of those impacts can be found in ***Table 24.15***.

Table 24.15 Summary of Potential Cumulative Impacts Identified for Archaeology and Cultural Heritage under Construction Scenario 2

Potential Impact	Receptor	Heritage Importance (as a Worst Case Scenario (WCS))	Magnitude (as a WCS)	Impact Significance (as a WCS)	Examples of Potential Mitigation Measures	Residual Impact (as a WCS)
Cumulative Construction Impacts with the proposed East Anglia TWO project						
Impact 1: Direct Impact on (Permanent Change to) Buried Archaeological Remains	Buried Archaeological Remains	≤ High	≤ 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	≤ Medium	≤ High	Major adverse	Initial informative stages of mitigation work and additional mitigation measures (see ***section* 24.3.3**)	**Minor adverse**
Impact 3: Indirect (non-physical) Impact on the Setting of Heritage Assets (both Designated and Non-Designated)	Heritage Assets (both Designated and Non-Designated)	High	None / Nil	No permanent impact (short-term temporary)	n/a	**No impact**
Impact 4: Impact on potential Geoarchaeological / Palaeoenvironmental remains, potentially indicative of former land surfaces	Geoarchaeological / Palaeoenvironmental remains	≤ High	≤ High	Major adverse	Initial informative stages of mitigation work and additional mitigation measures (see ***section 24.3.3***)	**Minor adverse**

Potential Impact	Receptor	Heritage Importance (as a Worst Case Scenario (WCS))	Magnitude (as a WCS)	Impact Significance (as a WCS)	Examples of Potential Mitigation Measures	Residual Impact (as a WCS)
Impact 5: Impact to site preservation conditions from drilling fluid breakout or oil spills	Buried Archaeological Remains	≤ High	Negligible	Minor adverse	n/a	**Minor adverse**
Cumulative Operational Impacts with the proposed East Anglia TWO project						
Impact 1: Indirect (non-physical) Impact on the Setting of Heritage Assets (both Designated and Non-Designated)	Heritage Assets (both Designated and Non-Designated)	High	Not yet determined. The Applicant has committed to an onshore cable route working width of up to 27.1m (for both the proposed East Anglia ONE North and East Anglia TWO projects) through the woodland south of Raidsend, which will inform the further settings assessment work to follow. The assessment undertaken to date as presented in the ADBA (***Appendix 24.1***) addresses Step 1 of the Historic England guidance on the Setting of Heritage Assets ('GPA3', Historic England 2017). It also begins to address Step 2 and Step 3. This settings assessment will be progressed between PEIR and ES as the proposed East Anglia ONE North project design is refined, with a view to fully assessing the potential for indirect (non-physical) impacts to occur on the heritage assets outlined in ***section 24.6.2.1*** and to inform decisions regarding appropriate mitigation strategies (where necessary) as part of Step 4 of GPA3.			
Impact 2: Impacts to archaeological site preservation conditions, where present, from heat loss from installed cables	Buried Archaeological Remains	≤ High	None / Nil		n/a	**No impact**
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. However, the onshore substation will likely be removed and be reused or recycled. It is expected that the onshore cables will be removed and recycled, with the transition bays and cable ducts (where used) left *in situ*. The detail and scope of the decommissioning						

Potential Impact	Receptor	Heritage Importance (as a Worst Case Scenario (WCS))	Magnitude (as a WCS)	Impact Significance (as a WCS)	Examples of Potential Mitigation Measures	Residual Impact (as a WCS)
works will be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. A decommissioning plan will be provided. As such, for the purposes of a worst-case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase.						

24.7.2 Cumulative Impact Assessment with Other Developments

241. Cumulative impacts are those which arise from the interaction of the proposed East Anglia ONE North project 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 24.16***.

242. The second stage of the CIA is an assessment of whether there is spatial and temporal overlap between the extent of potential effects of the onshore infrastructure and the potential effects of other projects scoped into the CIA upon the same receptors. To identify whether this may occur, the potential nature and extent of effects arising from all projects scoped into the CIA have been identified and any overlaps between these and the effects identified in ***Table 24.16***. Where there is an overlap, an assessment of the cumulative magnitude of effect is provided.

243. Following a review of projects which have the potential to overlap temporally or spatially with the proposed East Anglia ONE North project, one development has been scoped into the CIA.

244. ***Table 24.17*** provides detail regarding the project. The full list of projects for consideration will be updated following PEIR and agreed in consultation with local authorities. The remainder of the section details the nature of the cumulative impacts against all those receptors scoped in for cumulative assessment.

245. As outlined in ***section 24.4.4***, 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 limited to effects of the proposed East Anglia ONE North and East Anglia TWO projects. Indirect (non-physical) impacts on the setting of designated and non-designated heritage assets may, however, occur cumulatively as a result of the East Anglia ONE North with other developments.

Table 24.16 Potential Cumulative Impacts

Impact	Potential for Cumulative Impact	Rationale
Construction		
Direct impact on buried archaeological 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 buried archaeological remains arising from two or more projects are not considered possible.
Direct impact on above ground archaeological remains and heritage assets	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 above ground archaeological remains and heritage assets arising from two or more projects are not considered possible.
Indirect impact on the setting of heritage assets	Yes	Cumulative indirect impacts 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 above ground archaeological remains and heritage assets arising from two or more projects are not considered possible.
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 possible.
Operation		
Indirect impact on the setting of heritage assets	Yes	Cumulative indirect impacts 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	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

Impact	Potential for Cumulative Impact	Rationale
loss from installed cables		(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 possible.
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. However, the onshore substation will likely be removed and be reused or recycled. It is expected that the onshore cables will be removed and recycled, with the transition bays and cable ducts (where used) left *in situ*. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. A decommissioning plan will be provided. As such, for the purposes of a worst-case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase.		

Table 24.17 Summary of Projects considered for the CIA in Relation to Onshore Archaeology and Cultural Heritage

Project	Status	Development period	[9]Distance from East Anglia ONE North onshore development area (km)	Project definition	Level of information available	Included in CIA	Rationale
Sizewell C New Nuclear Power Station	Scoping Opinion Adopted by SoS on 02.06.2014	Uncertain	0.49km	Full Scoping Report Available: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-000103-Sizewell%20C%20EIA%20Scoping%20Report_Main%20text.pdf	Tier 5[10]	Yes	There is no above ground infrastructure for in the East Anglia ONE North project in the area adjacent to the proposed Sizewell C New Nuclear Power Station. Indirect cumulative impacts, should they occur, would therefore only arise as a result of con-current construction works.

[9] Shortest distance between the considered project and East Anglia ONE North – unless specified otherwise
[10] Based on criteria outlined in ***section 5.7.2*** of ***Chapter 5 EIA Methodology***

24.7.2.1 Cumulative Impacts during Construction

24.7.2.1.1 Impact 1: Indirect Impact on the Setting of Heritage Assets

246. Cumulative indirect (non-physical) impacts have the potential to occur upon heritage assets which have visibility of construction works associated with the project alongside those undertaken for other projects and activities, where construction works are con-current. Indirect impacts upon 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 indirectly impact heritage assets and their settings.

247. The project timescales of the proposed Sizewell C New Nuclear Power Station are currently unknown. As a worst case scenario, it must therefore be assumed that there is a potential for concurrent construction works to occur between the proposed East Anglia ONE North project and the proposed Sizewell C New Nuclear Power Station.

248. As such, there is the potential for cumulative indirect impacts on the setting of heritage assets with respect to construction works associated with these projects. Despite this potential, as part of the initial heritage settings assessment undertaken to date (see ***Appendix 24.1***, ***section 3.8***) 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 upon the setting of heritage asserts 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 Impact on the Setting of Heritage Assets

249. Cumulative indirect impacts upon the setting of heritage assets may occur during the operational phase due to the visibility and presence in the landscape of above ground project infrastructure alongside above ground infrastructure arising as a result of other projects or activities.

250. The extent of the proposed East Anglia ONE North project that is within the vicinity of the proposed Sizewell C New Nuclear Power Station 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 24.1***). As such, the presence of both the proposed East Anglia ONE North project and the proposed Sizewell C New Nuclear Power

Station cannot give rise to indirect cumulative impacts upon the setting of heritage assets during the operational phase (**no impact**).

24.7.2.3 Cumulative Impacts during Decommissioning

251. 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. However, the onshore substation will likely be removed and be reused or recycled. It is expected that the onshore cables will be removed and recycled, with the transition bays and cable ducts (where used) left *in situ*. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. A decommissioning plan will be provided. As such, 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

252. The inter-relationships that exist between onshore archaeology and cultural heritage and other relevant topics are presented in ***Table 24.18***.

Table 24.18 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 upon 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 upon 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 upon the setting of heritage assets (designated and non-designated)
Chapter 29 Landscape and Visual Impact	***Sections 24.5, 24.6*** and ***Appendix 24.1***	Indirect (non-physical) impacts upon the setting of heritage assets (designated and non-designated)

253. Information from these chapters will ultimately feed into and inform a consideration of potential indirect (non-physical) impacts upon the historic environment as part of the settings assessment, which will be progressed between PEIR and ES as the proposed East Anglia ONE North project design

is refined. A review of the assessment and conclusions reached with respect to these topics will also serve to identify any further potential impacts upon the historic environment and to help inform the impact assessment ultimately presented in the ES.

24.9 Interactions

254. The impacts identified and assessed in ***section 24.6*** could give rise to synergistic impacts as a result of interacting with one another. These areas of interaction are presented in ***Table 24.19***, along with an indication as to whether the interaction may give rise to synergistic impacts.

Table 24.19 Interaction Between Impacts

Potential Interaction between Impacts					
Construction stage impacts					
	Impact 1: Direct impact on buried archaeological remains	**Impact 2: Direct impact on above ground archaeological remains**	**Impact 3: Indirect impact on 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 impact on buried archaeological remains	-	No	No	Yes	Yes
Impact 2: Direct impact on above ground archaeological remains	No	-	Yes	No	No
Impact 3: Indirect impact on the setting of heritage assets	No	Yes	-	No	No
Impact 4: Impact on potential geoarchaeological / palaeoenvironmental remains	Yes	No	No	-	Yes
Impact 5: Impacts to site preservation conditions from drilling fluid breakout	Yes	No	No	Yes	-
Operation stage impacts					
	Impact 1: Indirect Impact on the Setting of Heritage Assets		**Impact 2: Impacts to site preservation conditions from heat loss from installed**		

Potential Interaction between Impacts		
		cables
Impact 1: Indirect Impact on the Setting of Heritage Assets	-	No
Impact 2: Impacts to site preservation conditions from heat loss from installed cables	No	-
Decommissioning stage impacts		
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. However, the onshore substation will likely be removed and be reused or recycled. It is expected that the onshore cables will be removed and recycled, with the transition bays and cable ducts (where used) left *in situ*. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. A decommissioning plan will be provided. As such, for the purposes of a worst-case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase.		

24.10 Summary

255. A summary of the findings of the PEIR for onshore archaeology and cultural heritage is presented in ***Table 24.20***.

256. In accordance with the assessment methodology presented in ***section 24.4***, this table should only be used in conjunction with the additional narrative explanations provided in ***section 24.6***.

257. At this PEI stage, the onshore cable route has not yet been defined, with refined and specific project parameters currently undetermined. As such, at this stage of enquiry the impact assessment as presented in this PEI chapter assumes that activities associated with construction may theoretically occur anywhere within the proposed onshore development area. On this basis, cumulative direct impacts of the proposed East Anglia ONE North project on the historic environment 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 proposed onshore development area as a whole).

258. A summary of potential cumulative impacts for onshore archaeology and cultural heritage with other projects is presented at the end of ***Table 24.20***.

Table 24.20 Potential Impacts Identified for Onshore Archaeology and Cultural Heritage

Potential Impact	Receptor	Heritage Importance (as a WCS)	Magnitude (as a WCS)	Impact Significance (as a WCS)	Examples of Potential Mitigation Measures	Residual Impact (as a WCS)
Construction						
Impact 1: Direct Impact on (Permanent Change to) Buried Archaeological Remains	Buried Archaeological Remains	≤ High	≤ 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	≤ High	≤ High	Major adverse	Initial informative stages of mitigation work and additional mitigation measures (see ***section 24.3.3***)	**Minor adverse**
Impact 3: Indirect (non-physical) Impact on the Setting of Heritage Assets (both Designated and Non-Designated)	Heritage Assets (both Designated and Non-Designated)	High	None / Nil	No impact	n/a	**No impact**
Impact 4: Impact on potential Geoarchaeological / Palaeoenvironmental remains, potentially indicative of former land	Geoarchaeological / Palaeoenvironmental remains	≤ High	≤ High	Major adverse	Initial informative stages of mitigation work and additional mitigation measures (see	**Minor adverse**

Potential Impact	Receptor	Heritage Importance (as a WCS)	Magnitude (as a WCS)	Impact Significance (as a WCS)	Examples of Potential Mitigation Measures	Residual Impact (as a WCS)
surfaces					***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	n/a	**Minor adverse**
Operation						
Impact 1: Indirect (non-physical) Impact on the Setting of Heritage Assets (both Designated and Non-Designated)	Heritage Assets (both Designated and Non-Designated)	High	Not yet determined. The assessment undertaken to date as presented in the ADBA (***Appendix 24.1***) addresses Step 1 of the Historic England guidance on the Setting of Heritage Assets ('GPA3', Historic England 2017). It also begins to address Step 2 and Step 3. This settings assessment will be progressed between PEIR and ES as the proposed East Anglia ONE North project design is refined, with a view to fully assessing the potential for indirect (non-physical) impacts to occur on the heritage assets outlined in ***section 24.6.2.1*** and to inform decisions regarding appropriate mitigation strategies (where necessary) as part of Step 4 of GPA3.			
Impact 2: Impacts to archaeological site preservation conditions, where present, from heat loss from installed cables	Buried Archaeological Remains	≤ High	None / Nil	No further impact	n/a	**No impact**
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. However, the onshore substation will likely be removed and be reused or recycled. It is expected that the onshore cables will be removed and recycled, with the transition bays and cable ducts (where used) left *in situ*. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. A decommissioning plan will be provided. As such, for the purposes of a worst-case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase.						

Potential Impact	Receptor	Heritage Importance (as a WCS)	Magnitude (as a WCS)	Impact Significance (as a WCS)	Examples of Potential Mitigation Measures	Residual Impact (as a WCS)
Cumulative Construction Impacts with Other Developments						
Impact 1: Indirect impact on the setting of heritage assets	Heritage Assets (both Designated and Non-Designated)	High	None / Nil	No impact	n/a	**No impact**
Cumulative Operational Impacts with Other Developments						
Impact 1: Indirect impact on the setting of heritage assets	Heritage Assets (both Designated and Non-Designated)	High	None / Nil	No impact	None required	**No impact**

24.11References

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