East Anglia
Offshore Wind

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East Anglia THREE

Chapter 25

Onshore Archaeology and Cultural Heritage

Environmental Statement
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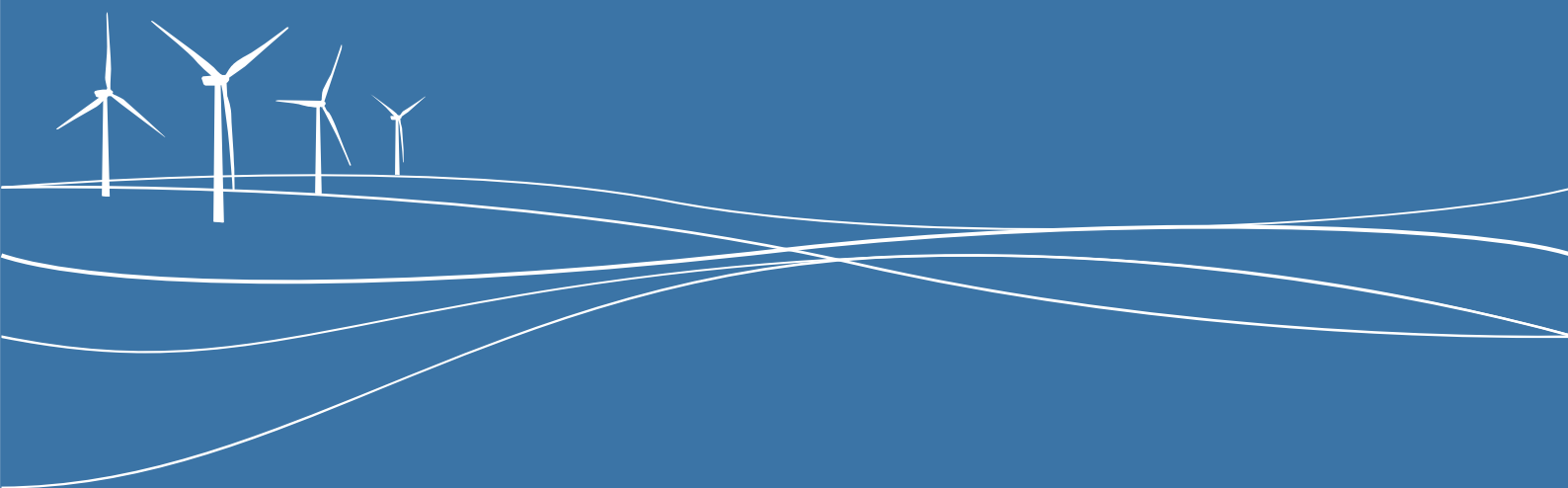

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25 ONSHORE ARCHAEOLOGY AND CULTURAL HERITAGE

25.1 Introduction

1. This chapter sets out the environmental baseline for onshore archaeology and cultural heritage and assesses the potential impacts to archaeological receptors from the proposed East Anglia THREE project. This chapter was compiled by Wessex Archaeology

2. This chapter focuses on assessing the potential impacts of the proposed onshore cable route on the archaeological and cultural heritage in line with National Planning Policy including the relevant National Policy Statements (NPS) for energy infrastructure (EN-1, EN-3) and National Planning Policy Framework (NPPF) Section 12.

3. The original Preliminary Environmental Information Report (PEIR) considered two construction options:

   - Scenario 1: use of pre-installed ducts installed during construction for the East Anglia ONE Offshore Windfarm; or
   - Scenario 2: open-trenching for cables for East Anglia THREE and installation of ducts for a future EAOW project.

4. Since the production of the PEIR the Development Consent Order (DCO) for the East Anglia ONE Offshore Windfarm has been approved. The East Anglia THREE onshore cable corridor would follow the same onshore cable corridor to that proposed within the East Anglia ONE DCO and therefore, to minimise disruption to local communities, it is proposed that the ducting for the onshore cable route be laid at the same time as the cables are laid for East Anglia ONE.

5. East Anglia THREE Limited (EATL) is currently considering constructing the project in either a Single Phase or in a Two Phased approach. Under the Single Phase approach the project would be constructed in one single build period and under a Two Phased approach the project would be constructed in two phases each consisting of up to 600MW.

6. EATL are also currently considering both a High Voltage Direct Current (HVDC) and a Low Frequency Alternating Current (LFAC) electrical solution for the proposed East Anglia THREE project.

7. Further information on these scenarios is available in Chapter 5 Description of the Development.

8. This impact assessment has been completed after reviewing and updating the desk-based assessment (DBA), aerial photograph assessment, field reconnaissance survey, and Archaeology and Cultural Heritage Environmental Statement (ES) chapter prepared for East Anglia ONE (RSK 2012). New data for this project was obtained in January 2014 from the Historic Environment Record (HER) maintained by Suffolk County Council (SCC) in order to ensure information was current and as complete as possible.

9. The results from a geophysical survey of the convertor station and substation(s) area undertaken in 2012, as well as the results from evaluations undertaken at both the East Anglia ONE and East Anglia THREE convertor station and substation(s) locations are also incorporated.

25.2 Consultation

10. Relevant comments from the Scoping Opinion to the proposed East Anglia THREE project and responses from the PEIR are included below.

Table 25.1 Consultation Responses

Consultee	Date / Document	Comment	Response / where addressed in the Environmental Statement
The Planning Inspectorate on behalf of the Secretary of State	Scoping Opinion: Proposed East Anglia THREE Offshore Windfarm (the Planning Inspectorate December 2012)	'The setting of cultural heritage resources could be affected; this includes historic buildings, historic landscapes and archaeological sites and the Secretary of State considers that these should be addressed in the ES. Cross reference should be made to the Landscape and Visual Impact Assessment (LVIA) section of the ES. The selection of the viewpoints within the LVIA should incorporate views from cultural heritage locations and should be agreed with the relevant authorities' (Paragraph 3.101).	The known and potential effect on the archaeological and cultural heritage resource is considered below drawing on data presented in *Technical Appendix 25.1*. Full cross referencing and integration to the LVIA *Appendix 29.1* and Chapter 29 Seascape, Landscape and Visual Amenity has been undertaken.
English Heritage	Scoping Opinion: Proposed East Anglia THREE Offshore Windfarm (the Planning Inspectorate December 2012)	'We require any Environmental Statement produced in support of these proposed projects to: • Assess direct impacts upon historic or archaeological marine or terrestrial sites and areas, whether statutorily protected or not; • Determine any indirect impacts, particularly the setting of listed buildings, scheduled monuments, conservation	The known and potential effect on the archaeological and cultural heritage resource is considered below drawing on data presented in *Technical Appendix 25.1*.

Consultee	Date / Document	Comment	Response / where addressed in the Environmental Statement
		areas etc., including change to historic landscape and seascapes character from the cumulative development of the East Anglia Zone; and • Detail the potential to encounter buried archaeology as revealed by both desk-based analysis of available records (national and local) and interpretation of geophysical and geotechnical marine survey data' (Appendix 2).	
Suffolk County Council	Scoping Opinion: Proposed East Anglia THREE Offshore Windfarm (the Planning Inspectorate December 2012)	'The surveys that have been completed along the corridor to date are sufficient to determine the application in relation to the corridor only. If consent is forthcoming, a full field evaluation will then be required along the corridor to inform the mitigation strategy. As the county council has stated for EA ONE, systematic evaluation is crucial to enable the scheme of archaeological investigation / requirements to be accurately defined. This is likely to consist of avoidance (in some cases), full excavation in others (in advance of construction), monitoring in other cases during construction. In the case of the converter station, however, the field evaluation must be undertaken before consent (geophysical survey and trial trenching) because there is less flexibility to preserve important remains in situ (along the cable route, there is flexibility to avoid important remains with the use of directional drilling, etc.). Again, this is consistent with the approach that we have agreed with the developer for EA ONE. Buried archaeology should be a 'primary consideration' during construction.' It should be clear that the use of HDD will not necessarily avoid impact, though it may reduce it' (Appendix 2).	The known and potential effect on the archaeological and cultural heritage resource is considered below drawing on data presented in *Technical Appendix 25.1*. Initial results of geophysical survey and evaluation undertaken for East Anglia ONE are outlined in *Technical Appendix 25.1.* The archaeological evaluation report for the East Anglia THREE substation(s) site is included in *Technical Appendix 25.4*. Horizontal Directional Drilling (HDD) is no longer being considered as part of the proposed East Anglia THREE project as where necessary this will have already occurred as part of East Anglia ONE.

Consultee	Date / Document	Comment	Response / where addressed in the Environmental Statement
Suffolk County Council (SCC)	Response to Preliminary Environmental Information Report (PEIR) July 2014	'SCC is content with the cultural heritage assessment in so far as it relates to archaeological matters, with the exception of the omission of the trial-trenched evaluation for East Anglia THREE converter station at Bramford. We would expect the results of trial-trenching for the converter station to be presented in full (*Appendix 25.1*, Section 1.7) but we are yet to see the evaluation report.'	Evaluation report submitted to SCC July 2014 and included in *Technical Appendix 25.4*.
		'We note the commitment to develop a Written Scheme of Investigation in line with that produced for EA ONE (paragraph 99).'	The application includes an outline archaeological Written Scheme of Investigation (WSI), which will be agreed with the relevant local authority and Historic England (formerly English Heritage) and Prior-to-Construction method statements for onshore activities will be agreed with all relevant local authorities with respect to the final WSI.
		Mid Suffolk District Council – 'Grade 2 listed buildings should not be regarded as being of only local or regional importance: they are designated assets in accord with nationally applied criteria. The suggested approach to the assessment of significance (paragraph 63) is supported however it should be remembered that the appreciation of setting and its contribution to the significance of a heritage asset is a dynamic experience that can only be fully appreciated by a site inspection.'	Although Listed Buildings are nationally designated assets their grading indicates variations in importance with Grade II Listed assets reflecting regionally important assets. This approach is consistent with the guidance given for the Design Manual for Roads and Bridges (Highways Agency 2007) which is the only current detailed guidance on Environmental Impact Assessment for large scale schemes. A site visit to assess

Consultee	Date / Document	Comment	Response / where addressed in the Environmental Statement
			setting was undertaken as part of the East Anglia ONE work and the results from this utilised in the assessment in section 25.5.8.
English Heritage (now Historic England)	Response to PEIR July 2014	'English Heritage broadly accepts the approach and format of the Onshore Archaeology and Cultural Heritage. .. In relation to Scenario One, the specific comment here is that the applicant needs to make clear the kinds of work that are necessary to access the pre-existing ducts and whether this would be undertaken from within the previously established working corridor. The impact on the historic environment from any draw holes, access pits and connection works necessary to complete Scenario One, would therefore need to be fully addressed. A Method Statements and a draft WSI would be necessary to ensure impacts on the historic environment are established and can successfully be mitigated. An assessment of the impacts would need to be provided as a chapter in the ES.' 'We would also expect the ES to include any relevant assessments in relation to the setting of designated heritage assets in particular with reference paragraphs 132 and 134 of the NPPF. The application including the on-shore and offshore components must be considered holistically and the ES would need to include an assessment of the impact upon the setting of the heritage assets, from Scenario Two (the converter station and any other built components), but also in relation to the turbine themselves. '	All construction, operational and decommissioning works will lie with Development Area considered within this assessment. The application includes an outline archaeological WSI, which will be agreed with the relevant local authority and English Heritage and Prior-to-Construction method statements for onshore activities will be agreed with all relevant local authorities with respect to the final WSI. An assessment of potential impacts to the setting of designated assets at the onshore substation(s) site is provided in Section 25.5.8. Assessment undertaken as part of Chapter 29 Seascape, Landscape and Visual Amenity, has concluded that the wind turbines lie at a considerable distance from land and will not be visible from shore and therefore no impacts to the setting of any onshore designated assets will result. This is discussed in section25.6. Though important and

Consultee	Date / Document	Comment	Response / where addressed in the Environmental Statement
		'Whilst in chapter 25.5.6 (section 83-88) we would agree that high values should be ascribed to the Second World War and Cold War assets, we do not agree that Neolithic, Bronze Age, Iron Age, Roman, Saxon, Early Medieval settlement are of a lesser value. Suffolk in particularly has well regarded and internationally famous pre-historic and Saxon remains and there is a high likelihood that valuable archaeology of those periods would be recovered during this project.' We also are pleased to see reference to palaeoenvironmental impacts. We are very aware that the onshore cable route will cross a number of important wetland environments, such as the Ramsholt Marshes and the river valleys of the Gipping and Deben. It is our view that is it possible to consider the significances of these deposits at this stage, given that a considerable amount of detailed information is available in the archaeological record in relation to the palaeoenvironmental potential of these sites. It would therefore be necessary to fully establish the significance of any deposits impacted by the proposal and detail this in the Environmental Statement. A programme for assessment and mitigation will need to be detailed fully in any draft WSI produced.	valuable remains from a number of periods are anticipated, the category high value is used in this assessment for remains judged to be of national value and equivalent in significance to Scheduled Monuments (the criteria for which are outlined in section 25.4.3.2). Within the guidance of the NPPF the loss of any such assets should be 'wholly exceptional'. The Development Area has already been selected to avoid any known archaeologically sensitive areas through its embedded mitigation strategy (section 25.3.2). Open trenching and HDD are no longer being considered as part of the proposed East Anglia THREE project. Further impacts to palaeoenvironmental deposits are therefore no longer anticipated (section 25.7.7).
Historic England	Response to WSI October 2015	We are aware that there are areas of uncertainty relation to the various construction options… We are also aware that the level of impact form onshore works relating to East Anglia Three will be considerably less than those from East Anglia ONE, however, there is still potential for	Archaeological works in connection with East Anglia ONE are in the early stages and the exact construction option for East Anglia

Consultee	Date / Document	Comment	Response / where addressed in the Environmental Statement
		archaeological impacts to arise from the scheme…. Following good management practices, the WSI should reflect upon and be informed by information from East Anglia ONE archaeological works, e.g. knowledge of particular features of the types of natural deposits encountered. This is an opportunity to produce a stronger document and we would like to be assured that this would be built in to the future versions of the WSI.	THREE is yet to be decided. The current document is therefore an outline archaeological Written Scheme of Investigation (WSI) and presents general methodologies and the potential of the areas as determined through the EIA. It is anticipated that variations to the WSI and more specific methodologies will be discussed and adopted following the results of EAST Anglia ONE archaeological works and the determination of the construction option for East Anglia THREE.
		The WSI mentions environmental sampling but geoarchaeology is not considered… The potential for geoarchaeological methods should be discussed within the WSI.	Amended to include, though it should be noted that as open trenching and HDD are no longer being considered as part of the proposed East Anglia THREE project further impacts to palaeoenvironmental deposits are therefore no longer anticipated.

25.3 Scope

25.3.1 Study Area

11. The recorded historic environment resource within a 500m Study Area around the Development Area, which includes the temporary access works, was considered in order to provide the context for the discussion and interpretation of the known and potential resource. Additionally, a Zone of Theoretical Visibility (ZTV) was created within a 4km radius from the substation(s) location (extended to 10km for all Registered Parks and Gardens), within which all designated cultural heritage assets were identified in order to assess the impact of the substation(s) location in terms of setting.

12. Cultural heritage assets can comprise extant monuments and buildings, both designated and un-designated, as well as buried archaeological remains and aspects of the historic landscape. These can be impacted directly through physical disturbance, and indirectly through impacts upon their setting. Results from Chapter 29 Seascape, Landscape and Visual Amenity have informed the assessment of setting impact.

25.3.2 Embedded Mitigation

13. The onshore cable route has been located to avoid designated heritage assets and known archaeologically sensitive areas. By undergrounding the onshore cable route any effects on setting during the long term operational stage of the proposed East Anglia THREE project are effectively negated.

14. Geophysical survey (RSK 2013) has already been undertaken at the substation(s) location site over an area of 24.4ha and incorporating the proposed converter station and substation(s) locations for East Anglia ONE, the proposed East Anglia THREE project and a future East Anglia Offshore Wind Ltd (EAOW) project. Following this, archaeological evaluation was undertaken at the converter station location for East Anglia ONE (ASE 2013) and further evaluation has now been carried out at the East Anglia THREE substation(s) location (*Figure 25.21*) (Wessex Archaeology 2014a) and a future EAOW project substation location (Wessex Archaeology 2014b). The results of these surveys are more fully discussed in section 25.5.4.

15. Viewpoints within the Landscape and Visual Impact Assessment have incorporated views from cultural heritage locations to determine any impacts on their setting, as agreed with the relevant local authorities (see Chapter 29 Seascape, Landscape and Visual Amenity.)

16. Careful siting of the substation(s) to the north of the existing National Grid Bramford Substation(s) is intended to gain maximum benefit from existing screening. Design

of the substation(s) and associated structures would seek to maximise and enhance existing screening and minimize impacts on the Grade II Listed Fidgeon's Farmhouse *(Figure 25.13)*. Use of sympathetic design, such as unobtrusive colouring and reduction of glare would diminish visual intrusion of these structures.

17. No open trenching or HDD works would be required for the proposed East Anglia THREE project, as this will be undertaken as part of the East Anglia ONE construction works. Intrusive groundwork within the onshore cable route would be restricted to jointing bays and any works associated with the installation of haul roads, which would largely occur within the previously excavated Development Area of East Anglia ONE.

18. EATL would implement a WSI during pre-construction and construction phases. This will allow all heritage assets to be identified prior to construction and outline a programme for preservation by record. This is considered to be key mitigation and is discussed in further detail in section 25.5.6.

25.3.3 Worst Case

19. There are two construction options for the proposed East Anglia THREE project:

- Single Phase approach; and
- Two Phased approach.

20. The Single Phase approach would occur during a single build period and install up to 1200MW. This would entail an overall construction period of 41 months and require 62 jointing bay compounds. A Two Phased approach would see two phases of construction each of up to 600MW over approximately 45 months total duration. This would require 124 jointing bay compounds (62 per phase) and the worst case is that the haul road would be removed between phases. Full details of the development proposals can be found in Chapter 5 Description of the Development.

21. EATL are currently considering both a High Voltage Direct Current (HVDC) and a Low Frequency Alternating Current (LFAC) electrical solution for the proposed East Anglia THREE project. A decision on the final electrical solution for the project will be made during the final design stage.

22. The worst case scenario in terms of the maximum parameters (e.g. footprint of infrastructure) is the HVDC solution, with the exception of the dimensions of the onshore substation(s), where the dimensions of the LFAC substation(s) are considered as worst case.

23. The HVDC scenario will therefore be used throughout the assessment of Single Phase and Two Phased approach to construction. At the substation(s), the larger LFAC substation(s) presents the worst case scenario.

24. The final routeing of cables connecting into the substation is not known at the current time. Therefore the pre-installed ducts will end just beyond the western boundary of the screening trees and bunding installed by East Anglia ONE to the east of the East Anglia THREE substation. Therefore the final stretch of cables will be open trenched from the end of the ducts to the substation. This will be a maximum distance of 300m. Likewise, National Grid will install ducts to connect into the existing Bramford substation but these will end at the boundary of the National Grid land, therefore EATL will need to open trench up to the end of these ducts, a distance of up to 235m. In both cases the cables would be laid directly into trenches.

25. As discussed in Chapter 5 Description of the Development (section 5.6.6.2.2) East Anglia THREE Limited (EATL) will investigate opportunities to leave haul road in place between projects and/or phases to further minimise impacts, this would be dependent upon the agreement of individual landowners and the approval of the local planning authorities. EATL consider that for onshore archaeology and cultural heritage it would be more disruptive for all receptors to install and remove haul road twice under the Two Phased approach due to the increased disturbance to the ground, than to leave it in situ. In addition, given that locations where haul road would be left in place is dependent upon individual landowner decisions and local authority approval, at this stage it is not possible to determine where this may occur and which receptors would be affected. Therefore, this potential case is not assessed independently as it is considered that the impacts of leaving the haul road in situ between phases falls within the magnitude of effects assessed under the two construction approaches presented.

26. *Table 25.2* considers the worst case scenarios with regard to the impact on the onshore archaeological and cultural heritage resource for both options.

Table 25.2 Worst Case Assumptions

Impact	Parameter	Notes
Construction		
Impact 1: Direct disturbance of buried archaeological remains	*Single Phase* Up to 62 jointing bay compounds (each of 3740m^2), with up to 248 kiosks. 18.05km of haul road required to	With the exception of new access routes (discussed in section 25.6.2.1.2) this assumes that the majority of the necessary archaeological investigation and mitigation has already been undertaken as part of the East Anglia ONE, though some further monitoring may be required.

Impact	Parameter	Notes
	access areas not accessible by public road. Open trench 300m from the end of the ducts to the substation. Open trench 235m from National Grid to existing substation at Bramford.	The pre-installed ducts will end just beyond the western boundary of the screening trees and bunding installed by East Anglia ONE to the east of the East Anglia THREE substation. Therefore the final stretch of cables will be open trenched from the end of the ducts to the substation. This will be a maximum distance of 300m. Likewise, National Grid will install ducts to connect into the existing Bramford substation but these will end at the boundary of the National Grid land, therefore EATL will need to open trench up to the end of these ducts, a distance of up to 235m.
	Two Phased Up to 124 jointing bay compounds (62 per phase), each of 3400m^2), with up to 248 kiosks. 36.1km of haul road (assuming total removal after Phase 1).	With the exception of new access routes (discussed in section 25.6.2.1.2) this assumes that the majority of the necessary archaeological investigation and mitigation has already been undertaken as part of the East Anglia ONE, though some further monitoring may be required.
Impact 2: Impacts on historically important hedgerows and the Historic Landscape Character (HLC)	*Single Phase* Up to 62 jointing bay compounds 18.05km of haul road	Direct impacts are anticipated to historic hedgerows where access to jointing bay compounds is required and there may be additional loss along the haul road. Any loss of field boundaries has an impact on the HLC though the re-instatement of lost hedgerows could mitigate this impact.
	Two Phased Up to 124 jointing bay compounds (62 per phase) 36.1km of haul road (assuming total removal after Phase 1).	Direct impacts are anticipated to historic hedgerows where access to jointing bay compounds is required and there may be additional loss along the haul road. Any loss of field boundaries has an impact on the HLC though the re-instatement of lost hedgerows could mitigate this impact.

Impact	Parameter	Notes
Impact 3: Impacts on the historic built heritage, both direct and indirect	*Single Phase* Substation(s) footprint up to 3.04ha (LFAC solution), with buildings up to 25m high	The route has already been selected to avoid known designated heritage assets therefore no direct impacts are anticipated on any Listed Buildings though potential impacts of vibration should be assessed. Vibration impacts are likely to be minimal. Indirect effects to setting may be present at the substation(s) location and this would be the same for both options but varies between the HVDC and LFAC solutions. Embedded mitigation would seek to maximise the use of existing screening and minimal use of reflective materials in the structures would reduce visual intrusion through glare.
	Two Phased Substation(s) footprint up to 3.04ha (LFAC solution), with buildings up to 25m high	The route has already been selected to avoid known designated heritage assets therefore no direct impacts are anticipated on any Listed Buildings though potential impacts of vibration should be assessed. Vibration impacts are likely to be minimal but may be more extensive under the Two Phased approach due to additional traffic. Indirect effects to setting may be present at the substation(s) location and this would be the same for both scenarios. Embedded mitigation would seek to maximise the use of existing screening and minimal use of reflective materials in the structures would reduce visual intrusion through glare.
Operation		
Impact 1: Direct disturbance of buried archaeological remains		No further impacts expected during operation. It is anticipated that any on-going maintenance works would lie within the already disturbed footprint.
Impact 2: Impacts on historically important hedgerows and the Historic Landscape Character		No further impacts expected during operation. It is anticipated that any on-going maintenance works would use existing access points.
Impact 3: Impacts on the historic built heritage, both direct and indirect	Up to 248 kiosks (as built during the construction phase).	Use of underground cabling rather than overhead pylons removes visual impacts along the onshore cable route. No direct impacts on built heritage are expected during operation though continued indirect effects on the setting of designated heritage assets may be present at the substation(s) location.

Impact	Parameter	Notes
Decommissioning		
Impact 1: Direct disturbance of buried archaeological remains along the onshore cable route		It is anticipated that the onshore cable would be decommissioned (de-energised) and cables left in-situ. It has been assumed that the jointing bays and ducts would be left in-situ. Kiosks would be removed.
Impact 2: Impacts on historically important hedgerows and the Historic Landscape Character (HLC) along the onshore cable route		If removal of any of the onshore components required removal of historic hedgerows then this would have an impact on the HLC, the re-instatement of lost hedgerows would mitigate this impact.
Impact 3: Impacts on the historic built heritage, both direct and indirect at the substation(s)		Removal of any above ground structures at the substation(s) location would potentially impact on the setting of designated heritage assets.

25.4 Assessment Methodology

25.4.1 Legislation, Policy and Guidance

27. The assessment of potential effects on archaeology and cultural heritage resources has been made with specific reference to relevant National Policy Statements (NPS); these form the principal policy framework within which decisions on Nationally Significant Infrastructure Projects (NSIP) are made.

28. Those NPS of specific relevance to the project comprises the EN-1 Overarching Energy NPS and EN-3 Renewable Energy Infrastructure both designated in July 2011. Also of relevance is NPPF Section 12: *Conserving and enhancing the historic environment;* this sets out the principal national guidance on the importance, management and safeguarding of heritage assets within the planning process.

29. EN-1 Paragraph 5.8.8 states that '*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*'.

30. EN-1 Paragraph 5.8.9 requires that '*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'*.

31. EN-3 Paragraph 2.6.141 requires that the '*assessment should be undertaken as set out in Section 5.8 of EN-1. Desk-based studies should take into account any geotechnical or geophysical surveys that have been undertaken to aid the wind farm design'*.

32. To summarise, government guidance provides a framework which:

- Recognises that heritage assets are an irreplaceable resource;
- Requires applicants to provide proportionate information on the significance of heritage assets affected by the proposed project and an impact assessment on that significance;
- Takes into account the desirability of sustaining and enhancing the significance of heritage assets and their setting;
- Places weight on the conservation of designated heritage assets; 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.

33. Works affecting Listed Buildings and Conservation Areas are subject to the *Planning (Listed Buildings and Conservation Areas) Act 1990* while those affecting Scheduled Monuments and Archaeological Areas of Importance must consider the *Ancient Monuments and Archaeological Areas Act 1979 (as amended)*. Additionally certain hedgerows may be deemed to be historically important under the criteria set out in the *Hedgerow Regulations 1997*, as amended by *The Hedgerows (England) (Amendment) Regulations 2002.*

34. The assessment has been undertaken in accordance with the relevant guidance and standard documents provided by the Chartered Institute for Archaeologists, and follows the guidance provided in the following publications:

- Department for Communities and Local Government (2013), Planning Practice Guidance for Renewable and Low Carbon Energy;
- English Heritage (2005), Wind Energy and the Historic Environment (currently being revised);
- English Heritage (2008a), Climate Change and the Historic Environment;
- English Heritage (2008b), Conservation Principals; Policy and Guidance for the Sustainable Management of the Historic Environment;
- English Heritage (2011), Seeing History In The View, A Method for Assessing Heritage Significance Within Views; and
- English Heritage (2015), Historic Environment Good Practice Advice in Planning. Note 3: The Setting of Heritage Assets.

35. Regional Spatial Strategies have now been abolished under the *Localism Act 2011* though this specifies a 'duty to co-operate' to ensure that local authorities and other service providers work together on projects affecting two or more planning areas or strategic infrastructure.

36. The Development Area for the proposed onshore cable route falls within the administrative boundaries of Suffolk Coastal District Council and Mid Suffolk District Council. The ZTV also includes assets within the boundary of Babergh District Council. These district councils are responsible for most planning matters within their boundaries with the exception of transport and minerals and waste which are overseen by Suffolk County Council. Suffolk County Council also maintains the Historic Environment Record (HER) for the county.

37. Suffolk Coastal District Council formally adopted its Core Strategy in July 2013 to provide a framework for planning in the district until 2027. This has no specific policies in regard to the historic environment but refers to NPPF Section 12 for guidance. Policies AP1 *Conservation Areas – Control of Development and Enhancement* and AP4 *Parks and Gardens of Historic or Landscape Interest* from the previous Suffolk Coastal Local Plan (saved policies July 2013) still remain in force until replacement by policies in other Development Plan Documents.

38. Mid Suffolk District Council formally adopted its Core Strategy in 2008 and has since undertaken a focused review (adopted 2012) which emphasises a presumption in favour of sustainable development, which includes protecting and enhancing the historic environment.

39. Babergh District Council have formally adopting Part 1 of their New Babergh Local Plan (Core Strategy & Policies, adopted February 2014), however until replaced by further Development Plan Documents, a number of policies relating to the historic environment outlined in the Babergh Local Plan Alteration No. 2 (2006) still remain in force.

25.4.2 Data Sources

Table 25.3 Data Sources

Data	Year	Coverage	Notes
National Heritage List for England (Historic England)	Consulted September 2015	Designated heritage assets	There is the potential to identify assets during this assessment which although currently non-designated are of demonstrably equivalent significance these will considered subject to the policies for designated heritage assets (NPPF paragraph 139).
English Heritage	Consulted for East Anglia ONE ES	Aerial photographs 1944-2009	None
Ordnance Survey (from Landmark)	Consulted for East Anglia ONE ES	Cartographic information 1881-present	None
British Geological Survey	Consulted June 2015	Geological information	None
Local authorities	Consulted June 2015	Conservation Areas and local heritage designations	None
Suffolk County Council (Archaeological Service)	Consulted January 2014	Historic Environment Record (HER) data Historic Landscape Characterisation (HLC) data Suffolk Rapid Coastal Zone Assessment Survey (RCZAS) data	The Historic Environment Record is not a complete record of all surviving elements of the historic environment resource, but is a record of the discovery of a wide range of archaeological and historical components. It does not preclude the subsequent discovery of further elements of the historic environment that are, at present, unknown.
Suffolk County Council (Record Office – Ipswich)	Consulted for East Anglia ONE ES	Tithe mapping Secondary sources	None
RSK	Consulted 2013	Geophysical survey substation(s)/ convertor station areas East Anglia ONE, East Anglia	None

Data	Year	Coverage	Notes
		THREE and East Anglia FOUR.	
ASE	Consulted May 2013	Archaeological evaluation East Anglia ONE convertor site	None
Wessex Archaeology	Consulted June / July 2014	Archaeological evaluation: East Anglia THREE (EA3) Converter Station, Suffolk Archaeological Evaluation	None

25.4.3 Impact Assessment Methodology

40. The overarching methodology followed for this assessment is outlined in Chapter 6 Environmental Impact Assessment Methodology. Impacts are identified and assessed following the source-pathway-receptor principle:

- Source – the origin of a potential impact. This will need to include both construction and operational impacts.
- Pathway – the means by which the effect of the activity could impact a receptor. In terms of the historic environment this will include both direct and indirect effects.
- Receptor – the element of the receiving environment that is impacted. This will include both designated and non-designated heritage assets.

25.4.3.1 Sensitivity

41. Assessments of the sensitivity of an archaeological receptor consider the capacity of that receptor to accommodate change and reflect its ability to recover if it is affected. The key considerations in assessing sensitivity are:

- The degree of adaptability (can a receptor avoid or adapt to an effect?);
- The degree of tolerance (can a receptor accommodate temporary or permanent change without a significant negative impact?); and
- The degree of recoverability (can a receptor recover following an effect and how long would this take?).

42. Levels of sensitivity are presented in *Table 25.4* below.

Table 25.4 Definitions of the Different Sensitivity Levels for Heritage Assets

Sensitivity	Definition
High	Receptor has ***very limited*** tolerance of effect and very limited capacity to recover or adapt to change.
Medium	Receptor has ***limited*** tolerance of effect and limited capacity to recover or adapt to change.
Low	Receptor has ***some*** tolerance of effect and may be able to accommodate or adapt to change.
Negligible	Receptor ***generally*** tolerant of effect.
Unknown	Insufficient data available to assess sensitivity.

25.4.3.2 Value

43. NPPF states that the significance of any heritage assets be clearly identified and this significance should be taken into account when considering the impact of a proposal on a heritage asset. The greater the significance of a heritage asset, the greater weight should be given to its conservation.

44. Significance (for heritage policy) is defined in NPPF Annex 2 as '*the value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting.'*

45. Aspects of the surroundings of a heritage asset in which it is experienced will constitute its setting. This extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may even be neutral.

46. The value of heritage assets has been assessed using the Secretary of State's non-statutory criteria for the selection of monuments for scheduling, as modified by English Heritage (now Historic England), as the basis for the designation of ancient monuments as part of its Monument Protection Plan (MPP). The criteria for archaeological features are:

- Survival;
- Documentation (archaeological);
- Documentation (historical);
- Group value (association);
- Group value (clustering);

- Diversity (features);
- Potential; and
- Amenity value.

47. These criteria are applicable for both designated and non-designated heritage assets.

Table 25.5 Summary of Factors for Determining Value and Significance of Heritage Assets

Value	Significance	Definition
Very High	**International**	World Heritage Sites Assets of recognised international importance Assets that contribute to international research objectives
High	**National**	Scheduled Ancient Monuments Grade I and Grade II* Listed Buildings Grade I and Grade II* Registered Parks and Gardens Undesignated assets of the quality and importance to be designated Assets that contribute to national research agendas
Medium	**Regional**	Grade II Listed Buildings Grade II Registered Parks and Gardens Conservation Areas Assets that contribute to regional research objectives
Low	**Local**	Locally listed buildings Assets compromised by poor preservation and / or poor contextual associations Assets with importance to local interest groups Assets that contribute to local research objectives
Negligible	**Negligible**	Assets with little or no archaeological / historical interest
Unknown	**Unknown**	The importance of the asset has not been ascertained from available evidence

48. Current national guidance for the assessment of the significance of heritage assets is based on criteria provided by Historic England (formerly English Heritage) in the document *Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment* (English Heritage 2008a). Within this document significance derives from the sum of values (aesthetic, communal, evidential and historical) attached to heritage assets:

- Evidential value - deriving from the potential of a place to yield evidence about past human activity.
- Historical value - deriving from the ways in which past people, events and aspects of life can be connected through a place to the present. It tends to be illustrative or associative.

- Aesthetic value - deriving from the ways in which people draw sensory and intellectual stimulation from a place.

- Communal value - deriving from the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory. Communal values are closely bound up with historical (particularly associative) and aesthetic values, but tend to have additional and specific aspects.

49. It should be noted that not all aspects of a heritage assets will contribute to its significance and high value assets are not necessary highly sensitive to all impacts.

25.4.3.3 Magnitude

50. Due to the great variety of resources and receptors, there is no standard scale of comparison against which the severity of effects on heritage assets may be judged. Assessment of direct effects has therefore considered the proportion of the features affected, and whether key characteristics would be impacted upon. Direct effects are permanent, as the loss or damage to cultural heritage material cannot be repaired, replaced or re-created.

51. Indirect effects can be permanent or transitory and refer to the perceptible visual effects on the physical setting of heritage assets that can be appreciated at a given time. Intrusive noise can also adversely impact on heritage assets whose wild or remote setting form part of their significance.

52. Impacts are expressed using a four point scale from 'negligible' to 'high'. Effects may be beneficial as well as adverse. The assignment of a magnitude of effect in this way is a matter of professional judgement. Where it is not possible to ascertain the magnitude of effect of a potential impact, the magnitude level is expressed as 'uncertain'.

Table 25.6 Definitions of the Magnitude Levels on Heritage Assets

Magnitude	Definition
High	Permanent changes over the whole receptor, with fundamental alteration to key characteristics that form part of the significance of the asset or its setting. This can be positive or negative.
Medium	Considerable or permanent changes, over the majority of the receptor, which results in discernible alteration to key characteristics that form part of the significance of the asset or its setting. This can be positive or negative.
Low	Change (temporary or permanent), over a minority of the receptor or which has limited but discernible alteration to key characteristics that form part of the significance of the asset or its setting. This can be positive or negative.

Magnitude	Definition
Negligible	Change that either has a very minor impact on a heritage asset or its setting or which is neutral in effect.
Uncertain	Precise nature or extent of impact unknown. Presence or extent of heritage asset uncertain. This scenario will most commonly occur with buried archaeological remains, or where potential indicated by a find spot is undefined.

25.4.3.4 Impact Significance

53. Impacts can arise due to the effects of construction on buried or extant archaeological remains as well as possible impacts during operation. Such effects can be either temporary or permanent. Impacts can also arise as a result of changes to the setting of a historic monument caused by the proximity of new structures, for example noise, dust, vibration or lighting. Where a significant negative effect is identified it may be appropriate to propose suitable mitigation measures in order to reduce the level of impact.

54. Due to the nature of the proposed development, while there may be a potential for direct physical impacts along the entirety of onshore cable route, visual impacts would be largely restricted to the substation(s) location as the potential impact of the kiosks on visual amenity would be negligible. Visual impact was assessed by comparing the ZTV to the actual views available of the landscape surrounding the substation(s) location. Heritage assets which could not be demonstrated to share intervisibility were then scoped out of any further assessment, while those identified as potential sensitive receptors were put forward for further detailed assessment. These were assessed in terms of their intrinsic significance and contribution made to that significance by potential impacts upon their setting arising from the proposed project.

55. Once the value of a heritage asset, its sensitivity to the possible impacts of the proposed project and the magnitude of this affect have been determined it is possible to determine the significance of the impact. The matrix below provides a framework around which the significance of the impact was assessed. Such assessment follows criteria set out in national guidelines as well as informed professional judgment.

Table 25.7 Impact Significance Matrix

Sensitivity	Magnitude					
	High	Medium	Low	Negligible	No impact	Uncertain
High	Major	Major	Moderate	Minor	No impact	Uncertain
Medium	Major	Moderate	Minor	Negligible	No impact	Uncertain
Low	Moderate	Minor	Minor	Negligible	No impact	Uncertain
Negligible	Minor	Negligible	Negligible	Negligible	No impact	Uncertain

56. The impact significance definitions are outlined in *Table 25.8* below.

Table 25.8 Impact Significance Definitions

Impact Significance	Definition
Major	Very large or large change to the receptor and / or its condition, both adverse or beneficial, which are likely to be important considerations as they affect assets of national or regional importance. Mitigation will almost certainly be required.
Moderate	Moderate change or impact on assets of local or regional importance, which are will require some consideration and potential mitigation.
Minor	Small change or impact on assets of local or negligible importance, which may require some consideration and potential mitigation.
Negligible	No discernible change to heritage asset.
No impact	No impact, therefore no change to heritage asset.
Uncertain	Extent of impact or significance of heritage assets uncertain.

57. Embedded mitigation measures which would alter the potential impact on the archaeological and cultural heritage resource are considered within the initial assessment. Further mitigation measures are suggested where appropriate with an assessment of the post-mitigation residual impact given.

25.4.4 Cumulative Impact Assessment

58. Potential cumulative impacts arising from the proposed scheme are also considered in line with Chapter 6 Environmental Impact Assessment Methodology. Impacts will be identified and assessed in terms of significance and magnitude using the same methodology outlined above and where appropriate potential mitigation measures outlined.

25.5 Existing Environment

25.5.1 Introduction

59. The following section provides a summary of the known and potential archaeological and cultural resource of the Development Area and its environs. Further detail is included in the DBA (*Appendix 25.1)* and listed in the associated gazetteer (*Appendix 25.2)*, using information from the data sources listed in *Table 25.3* plus other relevant literature.

60. All heritage assets have been allocated a unique reference number with a WA prefix and illustrated on the accompanying figures (*Figures 25.1* to *25.13*). Designated heritage assets are labelled in red text on the figures, while HER records are labelled black and features identified during the walkover survey are labelled in blue. Further discussion and details for all the entries can be found in *Appendices 25.1* and *25.2*.

61. Due to changes to Development Area extent between the PEIR and the ES a number of assets no longer fall within the revised Study Area. These are still listed for reference in *Appendix 25.2* and where appropriate inform the following baseline assessment.

62. Where mentioned in the text, the main archaeological periods are broadly defined as outlined in *Table 25.9.*

Table 25.9 Chronology

Period	Date range
Palaeolithic	970,000 – 9500 BC
Early Post-glacial	9500 – 8500 BC
Mesolithic	8500 – 4000 BC
Neolithic	4000 – 2200 BC
Bronze Age	2200 – 700 BC
Iron Age	700 BC – AD 43
Romano-British	AD 43 – 410
Saxon	AD 410 – 1066
Medieval	1066 – 1500
Post-medieval	1500 – 1800
19th century	1800 – 1899
Modern	1900 – present day

25.5.2 Designated Heritage Assets within the Study Area

63. There are no Registered Battlefields, Conservation Areas, World Heritage Sites or Grade I Listed Buildings within the Study Area.

64. Designated heritage assets identified within the Study Area consist of:

- One Registered Park and Garden (Grade II);
- Two Scheduled Monuments; and
- Ten Grade II* Listed Buildings and 68 Grade II Listed Buildings.

65. The Listed Buildings includes seven medieval churches, which are all Grade II* Listed with the exception of the Church of St Mary and St Martin in Kirton and the Church of All Saints in Little Bealings which are both Grade II Listed.

66. There are a number of larger, higher status houses and halls such as the Grade II* Listed 16th century properties of Newbourne Hall (WA17) and Seckford Hall (WA33) as well as Grade II* Listed 17th century houses of Westerfield Hall (WA61) and Mockbeggars Hall (WA71). The former medieval manor houses of Culpho Hall (WA53), Tuddenham Hall (WA54), Akeham Hall (WA63) and Claydon Hall (WA66) are all Grade II Listed.

67. The rural and agricultural nature of the area is reflected by the large number of Grade II Listed farmhouses and associated agricultural buildings, the majority of which are originally 16th or 17th century.

68. More modern development is seen in a number of 18th and 19th century properties such as and Rise Hall (WA65) as well as the limekiln to the south of Claydon (WA69).

69. The gardens and pleasure grounds at Bawdsey Manor (WA81) are associated with the late 18th early 19th century county house, which lies just to the south of the Study Area. The house and grounds were sold to the Air Ministry in 1939, which used it as radar research station and air defence until 1986.

70. The Scheduled Monuments include the 19th century hump-backed bridge at Great Bealings (WA82) and a Bronze Age barrow on Waldringfield Heath (WA87).

71. The sensitivity of such receptors will depend on the nature of the impact. While they are likely to have a high to medium sensitivity to direct impacts, their tolerance of indirect impacts may be high to negligible. The degree of sensitivity in both cases will depend on the significance of the affected fabric or setting to the significance of the monument.

72. Due to the nature of the proposed project few permanent impacts are anticipated on the designated heritage assets beyond the area of the substation(s) location though there may be some temporary effects during construction.

73. The Scheduled Monuments and Grade II* Listed Buildings are all of national importance and therefore high value while the remaining Grade II Listed Buildings and the Grade II Registered Park and Garden are of regional importance and medium value (as defined in *Table 25.5*).

25.5.3 Non-Designated Heritage Assets within the Study Area

74. There are 503 non-designated heritage assets recorded within the Study Area which includes 12 records identified by the walkover survey conducted for East Anglia ONE. Of these, 84 of the archaeological records nominally fall within the Development Area, though it must be stressed that the accuracy of position and known extent of these sites will vary. Due to the incomplete nature of the known archaeological record and the uncertainties of the exact location and boundaries of many of these sites, consideration of the wider Study Area was used to more completely understand the potential remains which may lie within the Development Area.

25.5.3.1 Prehistoric

75. Suffolk contains nationally important and significant sites contributing to our understanding of the Lower Palaeolithic due to its location at the limits of the ice sheets (Austin 1997, 5). Much of the Palaeolithic material is however located within specific geological deposits such as river terrace gravels and glacial tills; and material is often found in secondary contexts (*ibid.)*. Although there is only one record of Palaeolithic material within the revised Study Area (WA543) some potential for this period still remains, particularly associated with sediments of Middle Pleistocene age (Wymer 1999).

76. A number of Mesolithic sites also lie within the county, although many of these have been isolated findspots with few excavations of sites with material *in situ* (Austin 1997, 9). Mesolithic material has been identified at several locations within the Study Area (WA254, 353, 370, 396, 458 and 537), and there is some potential for further finds from this period.

77. Records within the proposed Development Area include a number of Neolithic, Bronze and prehistoric findspots (WA101, 107, 249, 309, 324, 354, 377, 432, 433, 493, 505, 592) as well as several cropmarks thought to relate to activity in this period. In particular a possible Neolithic long barrow site lies just to the west of Miller's Wood (WA573) and a ring ditch feature was identified during the geophysical survey on the proposed convertor site (RSK 2013) (*Figure 25.12*). Potential ring ditches in Martlesham, Newbourne and Hemley may be the remains of

Bronze Age barrows or hut circles (WA214, 220, 224, 240, 253, 317). A confirmed area of Neolithic activity (WA350) was located during works associated with the Martlesham by-pass, adjacent to the proposed cable route (*Figure 25.6*).

78. In 1840 two urns were found near Bridge Farm to the north of Little Bealings (WA425). These are undated but are probably later prehistoric or Romano-British in date. Further funerary activity could lie in this area.

25.5.3.2 Iron Age and Romano-British

79. An Iron Age pit (WA351) was also discovered during work associated with the Martlesham by-pass along the line of the route (*Figure 25.6*) and numerous other Iron Age and Romano-British finds lie within the proposed Development Area (WA145, 238, 307, 363, 375, 382, 403, 428, 432, 433, 461, 505, 530, 539). Archaeological evaluation undertaken on the site of the proposed East Anglia FOUR substation suggests Iron Age occupation in this area (Wessex Archaeology 2014b). Evidence from the Study Area suggests some continuity between these periods and a number of the undated field systems and enclosure cropmarks along the route may date to this time.

80. A Roman Road (WA552) lies along the proposed cable route corridor to the east of Little Blakenham and there is possible associated activity at this point (*Figure 25.11*). Other concentrations of Roman finds suggest some areas of higher potential along the cable route.

25.5.3.3 Saxon and Medieval

81. A number of Anglo-Saxon and medieval findspots and scatters are present within the cable route area (WA99, 113, 275, 276, 321, 328, 374, 377, 382, 432, 433, 444, 505, 571) and the landscape of the Deben valley is known to have been used throughout this period (Wade 1997, 47). Entries for most of the settlements in the Domesday Survey imply a pre-medieval origin and Saxon activity and likely associated occupation is known at Akenham, Tuddenham St Martin, Playford and the Bealings (Plunkett 2005, 33). The find of a brooch in conjunction with a probably human phalange (WA367) may indicate a burial or cemetery site just to the south of the where the route crosses the A12 at Martlesham.

82. While the medieval core of many of the villages can be assumed to lie in the vicinity of the churches further settlement and activity may lie within their hinterlands; in particular agricultural field systems. Some of the cropmarks identified along the route may therefore date to this time.

83. Bullen Green, which lies adjacent to the proposed convertor and substation(s) locations, is thought to be potentially medieval in origin (WA580) (*Figure 25.12*).

This is likely an area of common grazing land created from woodland clearance (assarting). Remnants of Ancient Woodland lie in this area (WA572, WA581) and results from the evaluation undertaken for East Anglia ONE (ASE 2013) and East Anglia THREE (Wessex Archaeology 2014a) would suggest late post-medieval enclosure in this area (*Figure 25.21*).

25.5.3.4 Post-medieval and Modern

84. Much of the proposed cable route is through largely rural areas which will have been largely unoccupied throughout the later medieval, post-medieval and modern periods. Activity is likely to be predominantly agricultural in nature and an area of likely post-medieval ridge and furrow was identified by the RSK walkover survey near Culpho (WA584), with a further area identified adjacent to the route near Claydon (WA589).

85. The onshore cable route crosses the River Deben and associated areas of marshland and reclaimed land. In doing this it passes through several post-medieval flood banks (WA132, 161, 162, 340). Post-medieval industry is also located along the route in the form of possible quarry or extractive pits (WA173, 218, 316) and kiln sites (WA300, 332).

86. Most of the modern entries relate to defensive structures and installations relating the First (WWI) and Second (WWII) World Wars and the Cold War. The majority lie at the coastal end of the cable route around Bawdsey, where the remains of a pillbox (WA98), gun emplacement (WA100), beach scaffold (WA582) and the anti-aircraft 'diver' battery (WA103) are situated. Of particular note in this area is the nationally important Cold War Bloodhound Missile Site near Bawdsey (WA114). Three possible bomb craters have also been identified from aerial photographs in this area (WA104) and further WWII remains are seen at Woodbridge (WA341, 356).

25.5.3.5 Undated

87. A number of undated features also lie within the Development Area which have largely been identified from cropmark evidence, and as such have not been directly dated. These include possible funerary features (WA240, 317, 573), field systems (WA176, 181, 199, 210, 213, 219, 246, 247, 253, 306), hut circles (WA214) and enclosures (WA212, 215).

25.5.4 Geophysical Survey and Evaluation Results

88. A detailed magnetometer survey was carried out over an area of 24.4ha and encompassing the proposed convertor and substation locations for East Anglia ONE, and the proposed East Anglia THREE project and a future EAOW project. This successfully identified a number of anomalies of likely, probable and possible archaeological interest within the site (*Figure 25.21*). In particular this identified a

partial ring ditch, most likely a round barrow or roundhouse, near the eastern edge of the survey area. The majority of the other responses appeared to relate to agricultural activity and most likely correspond to former field divisions, drainage ditches and ploughing trends.

89. Archaeological trial trench evaluation was undertaken on the East Anglia ONE convertor station site in 2013 (ASE 2013). Here 27 30m long trenches were excavated and located two post-medieval ditches within three of the trenches that corresponded to field boundaries depicted on the 1838 tithe map and early 20th century OS maps.

90. Nineteen trenches were excavated across the proposed East Anglia THREE substation site (Wessex Archaeology 2014a). Within four of the trenches in the south-western part of the area was located a former field boundary. This boundary can been seen on the 1838 tithe map and forms the western edge of Bullen Green, it is still shown as extant on 1970s OS mapping but may represent re-use of an older post-medieval boundary. Located just to the east of this feature was located another boundary ditch, seen within two trenches. Within this feature a shard of late medieval or early post-medieval pottery was found. This ditch seems to correspond with a boundary shown on the 1838 tithe map but absent by the 1882 OS first edition. The only other feature located during the evaluation was a modern, machine dug trench. This suggests that archaeological potential at the proposed East Anglia THREE substation(s) location is predominantly agricultural post-medieval and modern activity and of local interest only.

91. Archaeological trial trench evaluation was also undertaken at the future EAOW project substation site (Wessex Archaeology 2014b). In addition to a number of modern ditches this located some Iron Age activity within the north-eastern part of the area which suggested the potential presence of a small Iron Age enclosure or settlement.

25.5.5 Assessment of Sensitivity - Potential Archaeological Remains

92. Due to the unknown nature of archaeological remains they have a high sensitivity as any intrusive groundworks have the potential to result in damage to or loss of features or deposits. This in turn may result in a total or partial loss of significance of these heritage assets within the footprint of any intrusive groundworks. However, the significance of any impact will depend on the value of asset.

25.5.6 Assessment of Value - Potential Archaeological Remains

93. Only the modern WWII and Cold War remains at Bawdsey are judged to be of national or regional value and therefore of high value (*Figure 25.1*).

94. Based on the available evidence any Neolithic remains within the following areas are judged to be of potential regional interest and therefore of medium value:

- Martlesham and Woodbridge (Figure 25.6);
- Newbourne and Hemley (*Figure* 25.4);
- Waldringfield (*Figure* 25.5); and
- Great Blakenham, Little Blakenham and Bramford (*Figures 25.11* to *25.12*).

95. Bronze Age remains within the following areas may relate to funerary activity and are therefore of potential regional interest and therefore of medium value:

- Martlesham and Woodbridge (*Figure* 25.6); and
- Newbourne and Hemley (*Figure* 25.4).

96. Any Saxon remains encountered are likely to be of regional to national interest and therefore of medium to high value. Additionally there is potential for early medieval settlement within the Development Area. Such remains are likely to be of regional to national interest and therefore of medium to high value.

97. Further potential remains from the Bronze Age through to the Romano-British period are judged to be potentially present along the route which may be of medium to low value depending on their character and preservation.

98. Additional medieval and post-medieval remains may also be present along the route, though as they are likely to be predominantly agricultural in nature they are most likely to be of low value.

99. This assessment of potential is based on the known archaeological resource based on available data sets. This does preclude the discovery of higher, or indeed lower value assets along the route; the full potential for which is not currently apparent.

100. While hitherto unknown buried archaeological remains may be present within the Development Area a programme of assessment, the proposed project would seek to further identify and assess these prior to construction and appropriately mitigate any impacts that may subsequently occur as agreed in a WSI. This approach is consistent with that agreed for East Anglia ONE by both Suffolk County Council and Historic England (formerly English Heritage).

25.5.7 Palaeoenvironmental Impacts

101. Where the onshore cable route crosses waterways and marshland there is potential to encounter alluvium or river terrace deposits which may contain

palaeoenvironmental evidence. Such deposits are only likely to be encountered during deep excavations. While the potential of encountering such deposits is high their significance is currently unknown. However, as ducting within these areas would be laid as part of the East Anglia ONE project no further impacts are anticipated as part of the proposed East Anglia THREE project.

25.5.8 Designated Heritage Assets within the ZTV

102. A considerable number of additional designated heritage assets are located within the wider visual context established for the substation(s) location, within a 4km radius for Listed Buildings and Scheduled Monuments and 10km for Registered Parks and Gardens. These assets were compared against the ZTV to determine potential visibility with the substation(s) location. A site visit undertaken for East Anglia ONE also concluded that a number of assets did not share visibility with the site. Those designated heritage assets identified as not visible have been scoped out from further discussion.

103. The eligible designated assets within the wider context which have been identified as visible from the substation(s) location (*Figure 25.13*), and thus meriting further assessment, comprise the following:

- Two Registered Parks and Gardens;
- Six Grade I and one Grade II* Listed Buildings; and
- Eight Grade II Listed Buildings.

104. The Registered Park and Gardens of Chantry Park (RPG1000271) (Grade II) and Shrubland Hall (RPG1000155) (Grade I) were identified as potential sensitive receptors to the project however no meaningful visibility could be determined between the substation(s) location and the designated assets. Neither were views to the potential substation(s) location considered to form a meaningful part of the setting of these assets.

105. The Listed Buildings within the ZTV consisted of:

- The six Grade I Listed properties of Hintlesham Hall (LB1036917), the Church of St Mary (Burstall, LB1036948), the Church of St Peter (Elmsett, LB1194594), the Church of St Mary (Flowton, LB1251233), the Church of St Mary (Little Blakenham, LB1251408) and the Church of St Mary (Nettlestead, LB1263028);
- The Grade II* Listed Church of All Saints (Chattisham, LB1351620); and

- The eight Grade II Listed properties of Mulberry Hall (LB1036947), Canes Farmhouse (LB1036949) (WA80), Hintlesham Priory (LB1193814), Lovetofts Farmhouse (LB1250929), Bleak Hall (LB1251669), Tye Farmhouse (LB1263018), Fidgeons Farmhouse (LB1293253) and the Church Of St Nicholas (Hintlesham, LB1351644).

106. The setting of churches typically comprise the immediate curtilage and the settlement within which they are situated. Additionally they may serve as landmarks in the wider landscape. Farmhouses and houses derive much of their setting from their curtilage and also the fields, parkland and gardens within which they are situated. Of these only the Grade II Listed Fidgeon's Farmhouse (LB1293253) was identified to have any significant views incorporating the substation(s) location, however there is judged to be only a minor effect on the key characteristics of this asset and therefore a low magnitude effect. Given this and the already intrusive pylons in the landscape this asset is considered to have a medium sensitivity and a medium value.

107. The assessment of potential setting impacts to any of these designated assets was undertaken as part of the field survey conducted for East Anglia ONE and also considered as part of Chapter 29 Seascape, Landscape and Visual Amenity. The results are summarised in *Table 25.10*.

Table 25.10 Assessment of Visual Impacts to Designated Heritage Assets Identified Within the ZTV

NHLE No.	Name	Status	Value	Assessment	Anticipated impact
1000155	Shrubland Hall	Grade I Registered Park and Garden	Evidential, Historical, Aesthetic	Views and landscape design form a significant part of this Registered Park and Garden. However, these significant visual elements are predominantly contained within the boundaries of the park itself, due to extensive and mature vegetative screening at its boundaries. As a result views from the park to the landscape beyond are minimal, and highly restricted. None were identified that include the proposed substation(s) site. Within the park, Old Hall is located on a landscape high point, with glimpsed long-distance views to it from environs of the park. However, views from the house itself are shielded by vegetation.	No impact
1000271	Chantry Park	Grade II Registered Park and Garden	Evidential, Historical, Aesthetic	This Registered Park and Garden largely provides a designed setting for its associated house. Long-distance views do not significantly contribute to character, and there are no important sightlines or designed vistas identified. The main aspect of the house is north-west (away from substation(s) site). Area around the house is well vegetated.	No impact
1036917	Hintlesham Hall	Grade I Listed Building	Evidential, Historical, Aesthetic	The Hall lies within a designed and landscaped setting. The main aspect of the Hall is south-west, overlooking an open landscape. To the north east lies formally laid-out gardens. These are enclosed, and the Hall itself lies largely beyond ZTV due to vegetation screening between the garden and the golf course beyond. A tree lined avenue approach runs south east – north west, along which the substation(s) location site would not be visible.	No impact

NHLE No.	Name	Status	Value	Assessment	Anticipated impact
1036948	Church of St Mary (Burstall)	Grade I Listed Building	Evidential, Historical, Communal, Aesthetic	The church derives its context and setting from the surrounding settlement of Burstall. Although ground level falls to the north, the visibility of proposed substation(s) from ground level is restricted due to roadside hedgerows and intervening tree belts. Though the church may be visually prominent in the wider landscape it is views to the church, rather than views from it which are considered to be significant.	No impact
1194594	Church of St Peter (Elmsett)	Grade I Listed Building	Evidential, Historical, Communal, Aesthetic	Though the present settlement lies to the south the church is likely to have been the medieval settlement focus for the village. Its context and significant aspects of its setting will be largely derived from any contemporary settlement remains. Therefore though the substation(s) location site may be visible within church's setting, these views do not contribute to the asset's significance. Though the church may be visually prominent in the wider landscape it is views to the church, rather than views from it which are considered to be significant.	No impact
1251233	Church of St Mary (Flowton)	Grade I Listed Building	Evidential, Historical, Communal, Aesthetic	The church is located on a landscape high point, with views from the wider landscape to the church considered to be of significance. Much of the context of the setting of this asset is derived from the community within which it is situated rather than the wider landscape. Though the ground level falls towards the proposed substation(s), the church yard is well vegetated serving to screen long-distance views.	No impact

NHLE No.	Name	Status	Value	Assessment	Anticipated impact
1251408	Church of St Mary (Little Blakenham)	Grade I Listed Building	Evidential, Historical, Communal, Aesthetic	The church is located in a prominent position, with views from the wider landscape to the church considered to be of significance. Much of the context of the setting of this asset is derived from the community within which it is situated rather than the wider landscape. Mature vegetation within the churchyard and immediate setting screens long-distance views.	No impact
1263028	Church of St Mary (Nettlestead)	Grade I Listed Building	Evidential, Historical, Communal, Aesthetic	The tall church tower indicates that views of the church may be significant; however views from the church and churchyard are screened by mature vegetation, with no long-distance views. Much of the context of the setting of this asset is derived from the community within which it is situated rather than the wider landscape.	No impact
1351620	Church of All Saints (Chattisham)	Grade II* Listed Building	Evidential, Historical, Communal, Aesthetic	The tall church tower indicates that views of the church may be significant; however views from the church and churchyard are screened by mature vegetation, with no long-distance views. Much of the context of the setting of this asset is derived from the community within which it is situated rather than the wider landscape.	No impact
1036947	Mulberry Hall	Grade II Listed Building	Evidential, Historical, Aesthetic	Derives its context and setting from the surrounding settlement of Burstall which lies along a north west – south east aligned road. Although ground level falls to the north, the visibility of proposed substation(s) from ground level is restricted due to roadside hedgerows and intervening tree belts. Views towards the substation(s) site do not contribute to the significance of this heritage asset.	No impact

NHLE No.	Name	Status	Value	Assessment	Anticipated impact
1036949	Canes Farmhouse	Grade II Listed Building	Evidential, Historical, Aesthetic	Main aspect and frontage lies to the south-east while the substation(s) location lies further to the north. Visibility at ground level is restricted due to roadside hedgerows and intervening tree belts. This 16th century farmhouse derives much of its context from the rural and agricultural landscape in which it is situated of which the proposed substation(s) location forms only a minor aspect.	No impact
1193814	Hintlesham Priory	Grade II Listed Building	Evidential, Historical, Aesthetic	Though the priory is located in open countryside long-distance views and not considered to form a significance aspect of the setting of the asset. Main aspect is south-east (away from proposed substation(s)) while views to the north-east are predominantly screened by vegetation.	No impact
1250929	Lovetofts Farmhouse	Grade II Listed Building	Evidential, Historical, Aesthetic	Main aspect of farmhouse lies to the south-west (away from proposed substation(s) location site). Though it derives much of its context from the rural and agricultural landscape in which it is situated long distance views to the substation(s) location site are a minor aspect of this and are predominantly screened through vegetation.	No impact
1251669	Bleak Hall	Grade II Listed Building	Evidential, Historical, Aesthetic	Located in a slight landscape depression, mains aspects to the north-east and south-west (substation(s) location site to south-east). Long distance views not considered to contribute to the character of the setting.	No impact
1263018	Tye Farmhouse	Grade II Listed Building	Evidential, Historical, Aesthetic	Though the farmhouse is located on a ridge that overlooks the proposed substation(s) location site its main aspect is south east / east (away from substation(s) site). Therefore the substation(s) location site is not considered to form a significant part of the setting	No impact

NHLE No.	Name	Status	Value	Assessment	Anticipated impact
				of this asset.	
1293253	Fidgeon's Farmhouse	Grade II Listed Building	Evidential, Historical, Aesthetic	The farmhouse is located on a slight landscape rise with a vantage view towards the proposed substation(s) location site. Although the main aspect of the building is south-west, due to its vantage position, relative open setting, and the proximity to the substation(s) location site, construction of the substation(s) is considered to comprise a change within the largely agricultural setting of the asset. Furthermore, it is considered that the location of the farmhouse in this vantage position was intentional in order to survey the surrounding associated farmland, thus the change is considered a minor impact to the asset's significance. Modern development within this originally rural setting is apparent with a communications mast and pylons prominent within the view.	Minor
1351644	Church of St Nicholas (Hintlesham)	Grade II Listed Building	Evidential, Historical, Communal, Aesthetic	Much of the context of the setting of this asset is derived from the community within which it is situated rather than the wider landscape. Mature vegetation within the churchyard and areas of woodland in the wider landscape screen longer distance views.	No impact
1033263	Bullenhall Farmhouse	Grade II Listed Building	Evidential, Historical, Aesthetic	The Seascape, Landscape and Visual Assessment considers that views of the substation(s) location may be visible from the land near the farmhouse. The farmhouse itself has its main aspect to the south-east away from the substation(s) site and it is additionally screened by other farm buildings and tree cover. Modern development within this originally rural setting is apparent with a communications mast and pylons prominent within the view.	No impact

25.6 Potential Impacts

25.6.1 Introduction

108. As all ducts for the East Anglia THREE onshore cables are now proposed to be laid as part of the East Anglia ONE construction works no open trenching or HDD would be required for the proposed East Anglia THREE project. Intrusive groundwork within the onshore cable route will be restricted to pits excavated to house jointing bays and any works associated with the installation of haul roads which is largely expected to occur within the previously excavated Development Area of East Anglia ONE.

109. The approaches now being considered relate to whether the project would be constructed using a Single Phase or Two Phased approach and whether a HVDC and a LFAC electrical solution would be used. The potential impacts to archaeology and cultural heritage will be broadly similar for the two different construction options, though the decision to adopt a LFAC electrical solution will result in a larger development footprint at the substation(s) site. The LFAC solution will be considered for the purposes of assessment as it presents the worst case scenario.

110. Known assets potentially physically impacted during construction are listed in *Appendix 25.3* with the mitigation measures in place and resulting impact outlined.

25.6.2 Potential Impacts During Construction

25.6.2.1 Impact 1: Buried Archaeological Remains

Single Phase

111. With laying of ducting as part of the East Anglia ONE project, the direct impacts on potential buried archaeological remains are substantially reduced. However, some intrusive groundworks (at 62 jointing bay locations and for new trenches to connect from the ducts to the substation and from the substation to the National Grid ducts) will still be required though over a smaller cumulative area. Along the onshore cable route with the exception of new accesses, areas affected would lie within the previous disturbed footprint of the East Anglia ONE groundworks, in which case no further impacts on buried archaeological remains are anticipated. With regard to the trenches it is likely that some of the area will already have been disturbed for East Anglia ONE dependent upon the location of East Anglia ONE cables and landscaping.

112. The construction works for the haul roads will require stripping of the topsoil down to firm subsoil and may therefore impact on the upper parts of archaeological deposits or features. Within the new access routes any adverse impact to buried archaeological features would be permanent and irreversible in nature and although

the area of intrusive groundworks may be relatively small, the magnitude of impact on an individual asset may be high. However as part of the embedded mitigation strategy the proposed East Anglia THREE project would commit to a WSI in line with that proposed for East Anglia ONE. This ensures that all potential buried archaeological remains would be identified and mitigation measures for their preservation in situ or recording implemented. As a result any impact will be reduced to **minor adverse** or **negligible**.

113. For those areas affected by trenching at the substation again as part of the embedded mitigation strategy the proposed East Anglia THREE project would commit to a WSI in line with that proposed for East Anglia ONE. This ensures that all potential buried archaeological remains would be identified and mitigation measures for their preservation in situ or recording implemented. As a result any impact will be reduced to **minor adverse** or **negligible**.

Two Phased

114. This option would require excavation for up to 124 jointing bays as installation of cables will happen in two discrete periods. In addition, in the worst cases the haul road would be removed between phases. As with the Single Phase approach, with the exception of new accesses and trenching at the substation(s), areas affected would lie within the previous disturbed footprint of the East Anglia ONE groundworks, in which case no further impacts on buried archaeological remains are anticipated.

115. With regard to impacts from new accesses these will be as above for the Single Phase approach and therefore with the suggested mitigation would be **minor adverse** or **negligible.**

25.6.2.2 Impact 2: Field Boundaries and Historic Landscape Character

Single Phase

116. There will be some direct effects during the construction phase on a number of historic field boundaries and hedgerows. The loss of hedgerows and field boundaries can be considered to affect the Historic Landscape Character. This may occur where access to jointing bays is required as well as along the haul road. The magnitude of effect is judged as low as only a narrow area of disturbance (5.5m) is anticipated**,** resulting in an impact of **minor** significance. However, this impact can be largely mitigated by the reestablishment of any important hedgerows resulting in an impact of **negligible** significance.

Two Phased

117. Effects during the construction phases will be the same as for the Single Phase approach, though of longer duration. Even if hedgerows are not reinstated between phases the impacts to the HLC will be minor and temporary.

25.6.2.3 Impact 3: Built Heritage

25.6.2.3.1 Single Phase

118. There are no predicted direct effects to any designated heritage assets along the proposed cable route however there will be some temporary setting effects during the construction phase on a number of designated heritage assets. Given the temporary and indirect nature of this effect, the magnitude of effect is negligible and the impact is of **minor** to **negligible** significance.

119. There may be some potential effects from vibration on designated heritage assets near to the cable route and access roads. However this is judged to be of negligible magnitude and in addition, mitigation measures relating to vibration caused by construction traffic will be set out in a Code of Construction Practice and Traffic Management Plan as outlined in Chapter 26 Noise and Vibration. Therefore, the impact is considered to be of **minor** significance.

120. Some indirect impacts on the setting of the Grade II Listed Fidgeon's Farmhouse are anticipated at the substation(s) location, the footprint of which will be greater for the LFAC solution. Substantial woodland planting is proposed to the south-west (on a 5m high bund), north and east of the East Anglia THREE substation(s) which will further mitigate visual impact. Therefore these are considered to be negative but low magnitude and the impact is of **minor** to **negligible** significance.

121. Other potential impacts to setting such as noise at the substation(s) site are considered to be **negligible** (Chapter 26 Noise and Vibration) as it is anticipated that noise emissions will be governed by similar draft DCO noise restriction to that placed on East Anglia ONE.

122. As the closest located wind turbine would be 69km from the coastline, Chapter 29 Seascape, Landscape and Visual Amenity concludes that it would only be theoretically and partially visible from the highest point of 20m above Ordnance Datum (AOD) on Bawdsey Cliffs. Actual visibility would however be unlikely in most weather conditions; as a result no impacts to the setting of any of the coastal heritage assets are anticipated during construction.

25.6.2.3.2 Two Phased

123. As with the Single Phase approach impacts to any designated heritage assets along the proposed cable route will be restricted to temporary setting effects during the construction phase. Though this may be of longer duration and repeated at intervals during the Two Phased option it is still considered a temporary impact. Given the temporary and indirect nature of this effect, the magnitude of effect is negligible and the impact is of **minor** to **negligible** significance.

124. Potential effects from vibration on designated heritage assets near to the cable route and access roads may be more protracted under the Two Phased approach. However this is judged to be of negligible magnitude and in addition, mitigation measures relating to vibration caused by construction traffic have been set out in the Outline Code Construction Practice (OCoCP) and Outline Traffic Management Plan (TMP) as outlined in Chapter 26 Noise and Vibration. Therefore, the impact is considered to be of **minor** significance.

125. Indirect impacts on the setting of the Grade II Listed Fidgeon's Farmhouse and other potential impacts to setting such as noise at the substation(s) site will be the same as for the Single Phase approach.

126. As with the Single Phase approach **no impacts** to the setting of any of the coastal heritage assets are anticipated during construction.

25.6.3 Potential Impacts During Operation

25.6.3.1 Impact 1: Buried Archaeological Remains

127. There may be the need for ongoing maintenance works during operation which would either require further groundworks or be through inspection of above-ground kiosks. It is most probable that any further groundworks undertaken will be within the existing disturbed footprint and therefore no further impacts on archaeological remains after the construction phase are anticipated.

25.6.3.2 Impact 2: Field Boundaries and Historic Landscape Character

128. It is likely that maintenance work undertaken during operation will be able to utilise existing access points into fields and therefore no further impacts on field boundaries and Historic Landscape Character are anticipated after the construction phase.

25.6.3.3 Impact 3: Built Heritage

129. There are no anticipated impacts on designated heritage assets along the cable route after construction. As previously discussed the offshore components are considered

to lie at such a distance that they will not affect the setting of any of the coastal situated designated heritage assets.

130. Some indirect impacts on the setting of the Grade II Listed Fidgeon's Farmhouse are anticipated at the proposed substation(s) location which is incorporated in its westerly views. This impact will occur throughout the operational life of East Anglia THREE, which its anticipated to be 25 years. These are considered to be negative but low magnitude and of **minor** significance. The impact may also be substantially mitigated by the planting of trees to act as screening along the eastern boundary of the substation(s) location.

25.6.4 Potential Impacts During Decommissioning

131. This section describes the potential impacts of the decommissioning of the onshore electrical transmission works with regards to impacts on onshore archaeology. The decommissioning of the project would be as required by the requirements in the DCO. The approach provided below provides a high level likely approach which could be taken. Further details are provided in Chapter 5 Description of the Development.

132. It is anticipated that the onshore cable would be decommissioned (de-energised) and cables, jointing bays and ducts left *in-situ*. Kiosks would be removed.

133. The substation(s) and equipment could be removed and the components reused or recycled. The foundations would be removed to below ground level and the ground covered in topsoil and re-vegetated to return the site to its initial state or reused for other future developments.

134. The decommissioning methodology cannot be finalised until immediately prior to decommissioning.

25.6.4.1 Impact 1: Buried Archaeological Remains

135. Assuming no groundworks are undertaken outside the original excavated footprint, there are no further anticipated impacts on archaeological remains during the decommissioning phase.

25.6.4.2 Impact 2: Field Boundaries and Historic Landscape Character

136. Decommissioning could potentially involve the removal of sections of historic hedgerow to access kiosks for removal resulting on impacts on field boundaries and Historic Landscape Character. If necessary such disturbance is likely to be minimal and of low impact and **minor** significance. This impact can also be largely mitigated by the reestablishment of any important hedgerows resulting in an impact of

negligible significance, as would be set out in the Outline Landscape and Ecological Management Strategy (OLEMS).

25.6.4.3 Impact 3: Built Heritage

137. There are no anticipated impacts on designated heritage assets along the cable route during decommissioning.

138. Some indirect impacts on the setting of the Grade II Listed Fidgeon's Farmhouse are anticipated at the proposed substation(s) location if the equipment is removed. This is a positive impact would be low and of **minor** significance.

25.7 Cumulative Impacts

Table 25.11 Potential Cumulative Impacts

Impact	Potential for cumulative impact	Impact value	Rationale
Construction	Yes	**Minor**	Cumulative impacts from the use of pre-installed ducts are minimal. Little modern development has occurred within the Study Area so few cumulative impacts on the buried archaeological resource from other projects are expected.
Installation and operation of substations	Yes	**Minor**	There will be some cumulative impact with East Anglia ONE and a future EAOW project at the convertor and substation(s) sites in terms of the setting impact on designated heritage assets. However, this is considered to be negligible. There is also a cumulative impact in conjunction with the existing substation(s) structures.

139. While cumulative impacts will occur between East Anglia ONE, East Anglia THREE and a future EAOW project these are considered to be **minor** or **negligible**.

140. The Grade II Listed Fidgeon's Farmhouse (LB1293253) incorporates views towards the East Anglia ONE convertor site and the proposed substation(s) location sites for East Anglia THREE and a future EAOW project. The significance of the effect for East Anglia ONE and East Anglia THREE has been judged to be minor as it will result in a relatively small change on the surrounding farmland, which already incorporates some modern intrusive elements. The visual impact will also be softened and mitigated by substantial woodland screening, this would reduce the more significant

impact to the initial years of operation. This impact has been assessed in Chapter 29 Seascape, Landscape and Visual Amenity as not significant in terms of visual impact. The proximity of the convertor and substation(s) means that impacts to the setting of the farmhouse will only occur within limited views to the west and north-west with the majority of its rural setting unaffected. This close proximity also means that in certain directions the buildings screen each other, reducing the cumulative magnitude of change.

141. Possible cumulative impacts have been considered between the proposed East Anglia THREE project and the Bramford to Twinstead transmission connection which would provide an electricity connection between Bramford substation and Twinstead, to the south of Sudbury in Essex. However, there is not considered to be an overlap in terms either of the visual impacts nor the groundworks impact and therefore no cumulative impacts are considered to apply.

142. Cumulative impacts have also been considered between the Development Area and the re-development of the Old Fisons Site, Paper Mill Lane, Bramford. Due to the 19th and 20th century use of the site as chemical works there is anticipated to have been substantial disturbance of buried archaeological remains. The site, which includes the Grade II Listed North Warehouse, lies approximately 2.2km to the north-east of Fidgeon's Farmhouse, the only designated heritage assets considered to be visually affected by the substation(s). However, due to the surrounding topography and the belt of trees along the northern edge of Bullen Lane there is not considered to be any meaningful intervisibility between the sites and therefore no cumulative visual impact from the two proposed developments on Fidgeon's Farmhouse.

143. While there is a cumulative effect on buried archaeological remains within the wider area as a result of many of the developments considered in *Table 25.12,* assuming appropriate preservation by record, or where possible, preservation *in situ*, is achieved, then this potential loss will be mitigated in line with NPPF and other planning policy relating to archaeology. There may also be considered to be a potential cumulative positive impact as archaeological knowledge and understanding of the locality is improved.

144. Although there is some overall cumulative impact on the Historic Landscape Character (HLC) of the area and historic hedgerows this is considered to be negligible as no substantial impact on HLC is anticipated for any of the projects, due in large part of the re-development of brownfield sites.

145. *Table 25.12* below sets out the projects which are considered in the Cumulative Impact Assessment (CIA).

Table 25.12 Summary of Projects considered for the CIA in Relation to the Topic

Project	Status	Development period	[1]Distance from Direct Impacts Study Area (km)	Project definition	Project data status	Included in CIA	Rationale
East Anglia ONE	Consented	2018 –2019 / 25 years	0	Offshore Windfarm Project Project description available	Complete/high	Yes	While there are cumulative impacts during construction the extent of this impact on buried archaeological remains will depend which scenario occurs. While there are visual cumulative impacts at convertor station location thee are judged to be minor or negligible.
A future EAOW project	Pre-application	Unknown	0	Offshore Windfarm Project Outline project data only	Incomplete/low	Yes	While there are cumulative impacts during construction the extent of this impact on buried archaeological remains will depend which scenario occurs. There are visual cumulative impacts at substation(s) location.
Sizewell C	Pre-Application	Unknown	24.7	Nuclear Power Station No project detail available	Low	No	No overlap with Direct Impact Study Area, too distant to impact same receptors.
Bramford-Twinstead	Pre-application	Unknown	0	Outline only	Complete/high	No	Lies within direct impacts Study Area and also Zone of Theoretical Visibility (ZTV) considered for visual impact. Cumulative impact on potential buried archaeological remains should be appropriately mitigated through a

[1] Shortest distance between the considered project and East Anglia THREE– unless specified otherwise.

Project	Status	Development period	[1]Distance from Direct Impacts Study Area (km)	Project definition	Project data status	Included in CIA	Rationale
							scheme of archaeological recording. The new substation is to be located at Twinstead (near Sudbury) so visual impacts limited to the proposed overhead cable line.
SITA (EfW plant), Lodge Lane, Great Blakenham	Operational	Unknown	0.5	Energy From Waste Plant Project description available	Complete/high	No	Will be operational before construction commences. Brownfield site with evidence of substantial truncation in many areas. While there is a general cumulative impact on potential buried archaeological remains in the wider area this should be appropriately mitigated through a scheme of archaeological recording. Lies within visual Study Area but does not affect any of the same assets affected by East Anglia THREE.
Old Fisons site (land west of Paper Mill Lane, Bramford)	Planning Application TBD	Unknown	0.7	Business park and housing scheme. Master plans available	Complete/high	No	The Brownfield site on outer edge of Study Area is over 800m from Development Area. As an industrial brownfield site it is anticipated that below ground archaeological remains will have already been impacted. While there is a general cumulative impact on potential buried archaeological remains in the wider area this should be appropriately mitigated through a scheme of

Project	Status	Development period	[1]Distance from Direct Impacts Study Area (km)	Project definition	Project data status	Included in CIA	Rationale
							archaeological recording. The site lies within the visual Study Area
SnOasis, Great Blakenham	Planning permission granted	Unknown	0.7	Winter sport centre. Master plans available	Incomplete/low	No	Brownfield site, former cement works and quarry site. As an industrial brownfield site it is anticipated that below ground archaeological remains will have already been impacted. While there is a general cumulative impact on potential buried archaeological remains in the wider area this should be appropriately mitigated through a scheme of archaeological recording. Lies within visual Study Area but does not affect any of the same assets affected by East Anglia THREE.
Adastral park, Martlesham Heath	Planning permission granted	Unknown	0.8	Business park and housing scheme. Master plans available	Complete/high	No	Mostly brownfield site, lies over 1km from Development Area. While there is a general cumulative impact on potential buried archaeological remains in the wider area this should be appropriately mitigated through a scheme of archaeological recording.
Ipswich Garden Suburb	Identified in adopted Core Strategy	Primarily after 2020	3	Urban development north of Ipswich. Master Plan at consultation	Incomplete / medium	No	Greenfield site. No overlap with landfall, onshore cable route or converter station location While there is a general cumulative impact on

Project	Status	Development period	[1]Distance from Direct Impacts Study Area (km)	Project definition	Project data status	Included in CIA	Rationale
				phase.			potential buried archaeological remains in the wider area this should be appropriately mitigated through a scheme of archaeological recording.
Progress Power, Eye, Suffolk	Planning permission granted	Construction 2017-18, operation by 2019.	28	Gas fired power station development	Complete/ high	No	No overlap with landfall, onshore cable route or converter station location While there is a general cumulative impact on potential buried archaeological remains in the wider area this should be appropriately mitigated through a scheme of archaeological recording.
Land North Of Woods Lane, Melton, Suffolk	Conditionally Allowed	Unknown	2.7	Outline planning for a residential development for 180 dwellings (8.27ha in size) to include open space and provision of ecological habitat areas.	High	No	No overlap with landfall, onshore cable route or converter station location While there is a general cumulative impact on potential buried archaeological remains in the wider area this should be appropriately mitigated through a scheme of archaeological recording.

25.8 Inter-Relationships

146. Inter-relationships exist between the onshore archaeology and cultural heritage and the assessments undertaken for Landscape, Seascape and Visual Amenity, Terrestrial Ecology and Noise and Vibration. Information from these chapters has been used to help establish any potential impacts on the onshore archaeology and cultural heritage and inform the impact assessment presented here.

Table 25.13 Chapter Topic Inter-Relationships

Topic and description	Related Chapter	Where addressed in this Chapter
Landscape and Visual Impact Amenity	Chapter 29 Landscape, Seascape and Visual Amenity	25.5.8 Designated Heritage Assets within the ZTV 25.6.2 Potential Impacts during Construction
Noise and vibration	Chapter 26 Noise and Vibration	25.6.2 Potential Impacts during Construction
Terrestrial Ecology (Hedgerows)	Chapter 23 Terrestrial Ecology	25.6.2 Potential Impacts during Construction 25.6.4 Potential Impacts during Decommissioning

25.9 Summary

147. This section summarizes the main findings of this impact assessment, as outlined in *Table 25.14* below.

148. There is potential for archaeological sites or artefacts from the prehistoric period through to the modern day to be present within the Development Area and these remains may range in value and sensitivity from low to high. However it is anticipated that the majority of the potential disturbance of buried archaeological remains will occur during the works for East Anglia ONE with only minimal further groundworks required beyond the already disturbed footprint.

149. The proposed East Anglia THREE project would commit to a WSI in line with that proposed for the East Anglia ONE project. This embedded mitigation strategy would ensure that any intrusive groundworks beyond the already disturbed footprint would be identified with all identified heritage assets either preserved *in* situ or subject to preservation by record through an appropriate scheme of archaeological recording. This would result in impacts of **minor** or **negligible** significance.

150. There is potential for as yet unknown buried archaeological remains to be present within the Development Area and the extent and significance of some recorded assets is uncertain. The agreed WSI would allow the presence and nature of any

archaeological features or deposits to be confirmed, avoided if necessary or, where more appropriate, preserved by record through a scheme of archaeological recording. This embedded mitigation strategy would reduce the impact on these assets to a **minor** or **negligible** effect.

151. Some loss of historic hedgerows is anticipated during the construction phase however mitigation measures such as re-instatement will be considered and set out in an Outline Landscape and Ecological Management Strategy (OLEMS) and would result in a **negligible** impact (Chapter 23 Ecology).

152. Potential effects to the setting of a heritage asset were only identified at the substation(s) location and this can be effectively mitigated by enhancement of existing screening vegetation. This was the only impact anticipated during the operational phase.

153. Impacts for decommissioning were predicted to be similar to construction in the absence of further information on the likely process of decommissioning at this time. Though if similar mitigation measures are employed only **minor adverse** impacts should result. Where intrusive groundworks lie within the already disturbed footprint no further impacts will occur.

Table 25.14 Potential Impacts Identified for Onshore Archaeology and Cultural Heritage

Potential Impact	Receptor	Value / Sensitivity	Magnitude	Mitigation	Impact
Loss and destruction in any intrusive groundworks beyond already disturbed footprint	Archaeological remains	Medium to High	Medium to High*	Avoidance of identified assets where appropriate Geophysical survey, evaluation and excavation	Minor Adverse or Negligible
		Medium to Low	Medium to High*	Watching brief	Minor Adverse or Negligible
		Low	Medium to High*	Watching brief	Minor Adverse or Negligible
Loss and removal from areas along cable route and access roads	Field boundaries and Historic Landscape Character	Medium	Low	Re-instatement	Negligible
Setting and vibration	Built Heritage	Medium to High	Low	Avoidance of known assets	Negligible
Setting at substation(s) site	Built Heritage	Medium	Low	Screen views to substation(s) with vegetation	Negligible

*This represents the magnitude of impact to an individual asset, although overall the impact to buried archaeological remains is considered to be low.

25.10 References

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Chapter 25 Ends Here