



## **Norfolk Boreas Offshore Wind Farm**

# Appendix 28.4

Heritage Settings Assessment Workings (Onshore Project Substation and Associated Infrastructure)

**Environmental Statement** 

Volume 3

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## **Glossary of Acronyms**

ADBA	Archaeological Desk Based Assessment	
CRS	Cable Relay Station	
DCLG	Department for Communities and Local Government	
DCO	Development Consent Order	
ES	Environmental Statement	
HE	Historic England	
HVAC	High Voltage Alternating Current	
HVDC	High Voltage Direct Current	
LVIA	Landscape and Visual Impact Assessment	
NCC HES	Norfolk County Council Historic Environment Service	
NPPF	National Planning Policy Framework	
PEIR	Preliminary Environmental Information Report	
PPG	Planning Practice Guidance	
ZTV	Zone of Theoretical Visibility	

## **Glossary of Terminology**

National Grid overhead line modifications	The works to be undertaken to complete the necessary modification to the existing 400kV overhead lines.
National Grid substation extension	The permanent footprint of the National Grid substation extension.
Onshore project substation	A compound containing electrical equipment to enable connection to the National Grid. The substation will convert the exported power from HVDC to HVAC, to 400kV (grid voltage). This also contains equipment to help maintain stable grid voltage.





#### 1 An Overview of the Settings Assessment Process

## 1.1 Initial settings assessment: Archaeological Desk Based Assessment (Norfolk Vanguard)

- 1. The Archaeological Desk Based Assessment (ADBA) for Norfolk Vanguard represents a 'point in time' document prepared during the initial stages of the iterative project design process. The project description, study areas and baseline information referred to therein were subsequently refined and superseded by those set out in the Norfolk Vanguard Preliminary Environmental Information Report (PEIR) and later Environment Statement (ES) Chapter, and also the PEIR Chapter and later ES specific to Norfolk Boreas.
- 2. As part of the ADBA for Norfolk Vanguard, an initial heritage settings (baseline) assessment was undertaken with respect to potential impacts of the proposed (predominantly above ground) infrastructure on the setting of principally higher designated heritage assets in the immediate vicinity of the onshore project area. This focused specifically on the formerly proposed Cable Relay Stations (no longer required, see Chapter 5 Project Description for further information), onshore project substation and the National Grid substation extension including overhead line modifications.
- 3. The heritage settings (baseline) assessment addressed Step 1 of Historic England's guidance on the Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (Historic England, 2017), as well as approaches and requirements made within the National Planning Policy Framework (NPPF) and associated Planning Practice Guidance (PPG): Conserving and enhancing the historic environment (DCLG, 2012 and 2014), in terms of identifying those heritage assets whose setting may be affected by the proposed development(s).
- 4. Specific Zones of Theoretical Visibility (ZTVs) and photomontages had not yet been produced at this stage and therefore did not directly inform the initial settings assessment work. However, key landscape and heritage viewpoints were identified for comment by relevant stakeholders (including Norfolk County Council Historic Environment Services (NCC HES) and Historic England (HE)). This stage of assessment was also informed by the results of initial site visits undertaken on April 11<sup>th</sup> and 12<sup>th</sup> 2017, following early identification and mapping of those heritage assets whose setting was potentially considered to be most affected by the proposed development(s).
- 5. The initial settings assessment work identified a number of heritage assets considered to require further heritage setting consideration and assessment within the subsequent PEIR (and later ES) chapter for onshore archaeology and cultural





heritage for Norfolk Vanguard. Heritage assets requiring initial site visits or those warranting a revisit were also identified, the results of which would inform the EIA prior to submission of the final ES and DCO application for Norfolk Vanguard in June 2018. For more information on the heritage assets identified for further heritage settings assessment, see Appendix 28.1.

## 1.2 Subsequent Settings Assessment: Preliminary Environmental Information Report (Norfolk Vanguard)

6. At the time of PEIR for Norfolk Vanguard (Q4 2017), two export solutions were under consideration to connect Norfolk Vanguard to the National Grid; a High Voltage Alternating Current (HVAC) solution and a High Voltage Direct Current (HVDC) solution. Should the project have proceeded with the HVAC solution, a CRS would have been required located towards the landfall. As a CRS would have represented an above ground element of the onshore project infrastructure, in a relatively open and predominantly flat landscape; initial heritage settings associated site visits (April, 2017) were targeted and focused predominantly in the vicinity of the previous CRS search zones. Two proposed CRS options were under consideration at the time of compiling the PEIR, each of which were considered with respect to potential indirect (non-physical) impacts upon the setting of heritage assets.

#### 1.3 PEIR to ES (Norfolk Vanguard)

- 7. Additional site visits (November / December, 2017) were conducted following the Norfolk Vanguard PEIR submission to further assess the potential for any such setting impacts to occur in the vicinity of the above ground infrastructure with a focus on designated (as well as non-designated) heritage assets recorded within the areas immediately surrounding: 1) the onshore project substation area; and 2) CRS 5a and 6a (particularly with respect to the predominance of medieval churches and their visible towers within the landscape).
- 8. In addition to the heritage setting specific site visits undertaken, the results of the formal Landscape and Visual Impact Assessment (LVIA) process, and associated tool kits (such as ZTVs and photomontages), were also incorporated into and used to inform the settings assessment. Alongside the viewpoints considered in the LVIA, identified from a landscape perspective, a number of 'heritage-specific' viewpoints were also identified in consultation with and feedback from NCC HES and HE. All viewpoints took / have taken account of the topography of the landscape within which the project infrastructure was to be (re. CRS) and will be (re. onshore project substation) constructed and operated within this area of Norfolk. The LVIA tool kits were also used in order to establish any additional heritage assets, potentially located beyond the initial study area established, that required further





consideration, particularly where there was a possibility for intervisibility / interconnectivity with the above ground infrastructure.

- 9. The settings assessment work was developed further through an external specialist review of documentation and correspondence pertaining to the setting of heritage assets and the onshore elements of the project. At this time (December 2017 / January 2018) this was specifically in relation to the CRS sites under consideration and medieval churches in the vicinity. The external specialist reached the conclusion that "neither (CRS) option presents issues that are likely to result in harmful effects to the significance of designated heritage assets." It was nonetheless recommended that further, more detailed assessment work be undertaken to support this opinion, including some additional more bespoke historic landscape research in relation to this element of the project.
- 10. In February 2018, however, the decision to deploy HVDC cable technology for the Norfolk Vanguard and Norfolk Boreas projects was announced and as a result there was no longer a requirement for a CRS as part of the onshore infrastructure. Subsequently, the focus of the settings assessment as presented in ES Chapter 28 Onshore Archaeology and Cultural Heritage for Norfolk Vanguard and PEIR Chapter 28 Onshore Archaeology and Cultural Heritage for Norfolk Boreas (and within this Appendix 28.4) thereby largely concentrates on the potential for indirect (non-physical) setting impacts to arise as a result of the presence of the onshore project substation, with consideration also given to temporary / shorter-term indirect (non-physical) setting impacts arising as a result of construction works across the onshore project area as a whole.

#### 1.4 Introduction

- 11. The assessment of a heritage asset's setting (and if / how it contributes to the asset's heritage significance) is based on a staged approach, as outlined in Historic England's guidance on the Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (Second Edition) (Historic England, 2017). This approach enables proportionate decision-making with respect to managing change within the setting of heritage assets.
- 12. The following sections outline the settings assessment process undertaken to date in relation to the Norfolk Vanguard and Norfolk Boreas projects.

#### 1.5 ES (Norfolk Vanguard)

13. Heritage assets screened into the heritage settings assessment for the Norfolk Vanguard ES (and subsequent Norfolk Boreas PEIR) were those in closest proximity to the onshore project substation and associated infrastructure, as well as where the LVIA ZTV(s) (Figure 28.5) suggested some potential intervisibility, and wherever





intervening landform, tree cover, hedgerows, vegetation and built form may in fact allow for the level of visibility indicated by the ZTV, as follows:

- Two moated sites at Huntingfield Hall (5);
- Moated site 430m south-west of Bradenham Hall (6);
- Mona Hill (7);
- Church of St. Andrew, Bradenham (34);
- Church of St. Mary, Fransham (35);
- Church of All Saints, Necton (36);
- The Old Hall, Fransham (58); and
- Bradenham Hall (347).
- 14. Those underlined above were subsequently identified and captured as heritagespecific viewpoints for further consideration and visual representation.
- 15. Upon further cross referencing with the LVIA viewpoint locations for the onshore project substation, the majority were found to be to the south and south-west of the project substation and associated infrastructure locations (Chapter 29 Landscape and Visual Impact Assessment, Figure 29.4). As such a further check was also undertaken for areas where visibility is potentially greater based on the LVIA approaches / findings, i.e. those areas to the south of the substation, for example along or in the vicinity of St. Andrew's Lane and Hale Road.
- 16. As a result of this further check this brought the following assets into consideration (see Figure 28.5):
  - The Church of St. Mary, Bradenham (1825);
  - The Church of St. Andrew, Holme Hale (1826); and
  - Holme Hale Hall (and associated assets) (1828).
- 17. As above, those underlined have been subsequently identified and captured as heritage-specific viewpoints for further consideration and visual representation.
- 18. Finally, with respect to the onshore project substation and associated infrastructure, the following assets to the north and north-east were also subject to further checks (Figure 28.1a (map 9), b and c and Figure 28.5):
  - Wendling Abbey, Scheduled Monument (4); and
  - The Church of All Saints, Fransham (1827).
- 19. The heritage assets identified above were subject to a detailed assessment with consideration of their heritage significance and contribution made by their setting. The settings assessment approach in each case took intervisibility into account, primarily with the onshore project substation and associated infrastructure, which is





considered to represent the worst case assumption with regards to the setting of heritage assets insofar as it represents the introduction of new above ground infrastructure into the landscape. As part of the assessment, it was determined whether further action was required or not beyond the initial stage(s) of the stepped approach to the heritage settings assessment.

20. Outside of the onshore project substation and associated infrastructure area, a focus was also placed on those assets in closest proximity to proposed trenchless crossing zones (e.g. HDDs) and associated indicative footprints, and mobilisation zones, as well as those within approximately 50m of proposed access routes (side accesses both for construction and operation) on the basis that such heritage assets may have intervisibility with and be affected by the temporary construction activities within these areas.

#### 1.6 PEIR (Norfolk Boreas)

- 21. The heritage assets scoped into the heritage settings assessment as reported on in the Norfolk Vanguard ES have also been considered in relation to the Norfolk Boreas project. Due to the strategic co-locating of the Norfolk Boreas and Norfolk Vanguard proposed above ground infrastructure and onshore project area, the assets identified for assessment under the Norfolk Vanguard DCO application were also considered most relevant to the Norfolk Boreas assessment.
- Under Scenario 2, the proposed siting of the Norfolk Boreas onshore project 22. substation is assessed within PEIR Chapter 28 as being within a defined search area (the onshore project substation search area), which includes the footprint of the Norfolk Vanguard substation (as assessed in the Norfolk Vanguard DCO application) and the area immediately eastwards. Although theoretically the Norfolk Boreas onshore project substation may be located anywhere within the defined onshore project substation search area, visualisations prepared for the LVIA are based on the siting of the Norfolk Boreas onshore project substation at the location of the Norfolk Vanguard substation. The siting of a substation in this location is considered to represent the worst case from a landscape perspective due to the surrounding landform, as infrastructure will be slightly more exposed in this area. As such, the findings of the heritage settings assessment as presented in the Norfolk Vanguard application are also considered directly relevant to Scenario 2 of the Norfolk Boreas application. The LVIA ZTV for Scenario 2 was, however, based on the search area as a whole and regenerated for the Norfolk Boreas assessment. This ZTV was used in order to establish any additional heritage assets that required further consideration. No heritage assets in addition to those already assessed as part of the Norfolk Vanguard project were identified as requiring further consideration based on this exercise.





23. Under Scenario 1, the Norfolk Boreas onshore project substation is proposed within the area immediately to the east of the Norfolk Vanguard substation. Visualisations (photomontages) prepared as part of the LVIA for the Norfolk Vanguard DCO application assessed the potential siting of the Norfolk Boreas onshore project substation at this location to inform the Norfolk Vanguard cumulative impact assessment. These toolkits were re-assessed in relation to Scenario 1 of the Norfolk Boreas application with a view to identifying any heritage assets with intervisibility / visibility of the above ground infrastructure specific to Norfolk Boreas. Although no heritage assets in addition to those already assessed as part of the Norfolk Vanguard project were identified as requiring further consideration in relation to the Norfolk Boreas project, this process revealed a potential for indirect cumulative impacts to occur upon the setting of heritage assets within the wider substation area as a result of both projects (discussed below).

#### 1.7 ES (Norfolk Boreas)

24. Under Scenario 2, the onshore project substation location was refined from a search area to a particular location (see Figure 28.5b). The LVIA toolkits (ZTV and visualisations) were updated to reflect this refined location. These toolkits were reassessed as part of the ES. Although no fundamental changes were observed regarding impact significance, it is acknowledged that visual impacts under Scenario 2 arising as a result of the refined onshore project substation location were reduced to that which was assessed as part of the PEIR.

#### 1.8 Heritage Settings Assessment Conclusions (Norfolk Boreas)

25. The table below provides detail of the heritage assets subject to review as part of the heritage settings assessment specifically in relation to the onshore project substation and associated infrastructure for the Norfolk Boreas project, the results of which are summarised within the main body of ES Chapter 28 Onshore Archaeology and Cultural Heritage, where relevant.





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Table 1.1 Heritage assets subject to review as part of the heritage settings assessment specifically in relation to the onshore project substation and associated infrastructure for the Norfolk Boreas project

HERITAGE SETTINGS	HERITAGE SETTINGS ASSESSMENT (ONSHORE PROJECT SUBSTATION AND ASSOCIATED INFRASTRUCTURE RELATED) WORKINGS:					
Heritage Asset: RHDHV ID NO. / Other ID NO's.	Reason for Initial Consideration.	Description of the Heritage Assets and their Settings / Comment on Intervisibility / Identification of any Further Action Required.	Supporting Visuals / Visualisations, if applicable.			
		A rectangular moat, formerly occupied by Huntingfield Hall, approximately 40m east of another, square, moat. The moated sites are two of ten recorded in the Parish of Bradenham.  First scheduled in September 2002 the two moated sites at Huntingfield Hall are recorded as surviving well as a series of earthworks and buried deposits, despite some superficial disturbance. The moats have both archaeological and evidential value. The association of the two moats together represents potentially added interest, providing evidence for the development of the medieval landscape.	See Figure 28.1a (map 9), b and c and Figure 28.5.			
Two moated sites at Huntingfield Hall (5). List Entry No. = 1020646 NHER = 1036	Scheduled Monument.  Highly Designated Heritage Asset(s) in Proximity to the Onshore Project Substation.	Around 6,000 moated sites are known in England. The majority of moated sites served as prestigious residences with the provision of a moat intended as a status symbol rather than any practical military defence. The peak period during which moated sites were built was between about c. 1250 and 1350 and by far the greatest concentration lies in central and eastern parts of England. Moated sites form a significant class of medieval monument and are important for understanding the distribution of wealth and status in the countryside.				
		Under both Scenarios the LVIA ZTV (Chapter 29, Figure 29.5 and Figure 29.16) shows no intervisibility between the monument(s) and the onshore project substation located approx. 3 km or 2.8 km to the west under Scenarios 2 and 1 respectively. A site visit (December 2017) also confirmed this to be the case, with much existing screening (and intervening woodland, vegetation and topography) noted. The moated sites are now tree covered and/or surrounded by trees and located to the east side of New Lane.  No further action required.				
		Another medieval moated site located 430m south-west of Bradenham Hall.  First scheduled in September 2002 the moated site is recorded as surviving well as a series of earthworks and buried deposits. The buried remains will include archaeological information concerning the construction of the moat, the layout and construction of buildings which stood on the island and activities relating to its occupation. Evidence for earlier land use is also likely to be preserved in soils buried beneath the raised platform. A local	See Figure 28.1a (map 9), b and c and Figure 28.5.			
Moated site 430m south west of Bradenham Hall (6). List Entry No. = 1020645 NHER = 1037	Scheduled Monument.  Highly Designated Heritage Asset in Proximity to the Onshore Project Substation.	tradition that there was a Norman tower on the site provides added interest.  The moat is one of ten recorded in the parish of Bradenham. The site of the monument includes a 2 mboundary (buffer zone) around the extant archaeological features, considered to be essential for the monument's support and preservation.				
		Under Scenario 1 the LVIA ZTV (Chapter 29, Figure 29.5) shows no or very low possibility of intervisibility between the monument and the onshore project substation located approx. 1.6 km or 1.4km to the north-west. Under Scenario 2 the LVIA ZTV (Chapter 29, Figure 29.16) shows no intervisibility between the monument and the onshore project substation There is significant woodland screening (Great Wood) between the moated site and the substation locations. The moated site is tree covered and located to east of Wood Lane.  No further action required.				





HERITAGE SETTINGS	IERITAGE SETTINGS ASSESSMENT (ONSHORE PROJECT SUBSTATION AND ASSOCIATED INFRASTRUCTURE RELATED) WORKINGS:				
Heritage Asset: RHDHV ID NO. / Other ID NO's.	Reason for Initial Consideration.	Description of the Heritage Assets and their Settings / Comment on Intervisibility / Identification of any Further Action Required.	Supporting Visuals / Visualisations, if applicable.		
Mona Hill (7).	Scheduled Monument.	A large Bronze Age Round Barrow still surrounded by a ditch. The mound has not been excavated, although one historic record suggests that 'several ornaments and arms' were found here. The barrow (or tumulus), known as Mona Hill, is located south-east of the village of Necton on Necton Common. It was formerly known as North Hill.	See Figure 28.1a (map 9), b and c and Figure 28.5.		
List Entry No. = 1003154 NHER = 4603	Highly Designated Heritage Asset in Proximity to the Onshore Project Substation.	The monument is located within a dense woodland block on Necton Common, as shown on the LVIA ZTV (Chapter 29, Figure 29.5 and Figure 29.16) and is surrounded by trees on all sides. As such, under both Scenarios there is no intervisibility between the monument and the onshore project substation located approx. 1.6 km to the north under each Scenario.			
		No further action required.			
Church of St. Andrew, Bradenham (34). List Entry No. = 1342620 NHER = 8725	Grade I Listed Building.  Highly Designated Heritage Asset in Proximity to the Onshore Project Substation.  LVIA Cultural Heritage Specific Viewpoint Location: CH1.	The Parish Church of St. Andrew, Bradenham was first listed in June 1960. The building represents a medieval and later church, recorded as being built on the same site as an earlier Saxon church, and some of the building material has been reused in the present building, which was built around 1300. A new tower was built between 1484 and 1519 when the nave and aisle roofs were also heightened and aisle windows changed. As with many other churches of this period, other restorations were made in the 19th century. The setting of the church has a rural feel and one of relative isolation, being located away from the main settlement of Bradenham itself.  Under Scenario 2, the LVIA ZTV (Chapter 29, Figure 29.5) suggests medium to low visibility between the church and the onshore project substation located approx. 2 km to the north-west. However, during the site visit (December 2017) the church was noted as being situated in a hollow and although views towards the substation site may be afforded from the top of the tower, views from ground level are unlikely, as these are well-screened by intervening topography, vegetation, trees and hedgerows. The tower is not believed to be publically accessible. Scenario 2 visualisations prepared for Cultural Heritage Viewpoint No. 1 (CH1) (see below within this Appendix) do, however, indicate the potential visibility of a barely discernible glimpsed 'roof-top' section of the Norfolk Boreas onshore project substation and a number of masts associated with the substation from the northern-most extent of the grounds of the church.  Under Scenario 1, the LVIA ZTV (Chapter 29, Figure 29.16) suggests some low-level visibility of both the Norfolk Boreas and Norfolk Vanguard onshore project substations and associated infrastructure may be possible from the grounds of the church (with the onshore project substations and associated infrastructure may be possible from the grounds of the church (with the onshore project substations nostly shielded by intervening vegetation) and a number of assoc	See Figure 28.1a (map 9), b and c and Figure 28.5.+ Cultural Heritage Viewpoint No. CH1.  Church of St. Andrew, Bradenham (34).		





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HERITAGE SETTINGS Heritage Asset: RHDHV ID NO. / Other ID NO's.	Reason for Initial Consideration.	Description of the Heritage Assets and their Settings / Comment on Intervisibility / Identification of any Further Action Required.	Supporting Visuals / Visualisations, if applicable.	
		constitute harm to the heritage significance of the church nor any associated loss of appreciation of the heritage asset's significance.  Further action (both Scenarios): This impact is considered to represent a negligible effect upon the heritage setting of the church, resulting in a minor adverse impact significance as a worst case. Although the visibility of the onshore project substation(s) is only very slight from the grounds of the Church of St Andrew (and the impact considered non-significant in EIA terms), this heritage asset and the associated impact upon it may be subject to some further consideration in relation to the possibility of off-site mitigation planting during the post-consent phase, in order to potentially reduce the residual impact significance to negligible levels.	Photo looking c. NW from the entrance to the grounds of the Church of St. Andrew, Bradenham (34). Taken in the general direction of the onshore project substation site.	
		The Parish Church of St. Mary, (Little) Fransham was first listed in May 1951.	See Figure 28.1a (map 9), b and c and Figure 28.5.	
Church of St. Mary, Fransham (35). List Entry No. = 1152560 NHER = 7297	Grade I Listed Building.  Highly Designated Heritage Asset in Proximity to the Onshore Project Substation.	The building represents a medieval and later church, dating mainly to the early 14 <sup>th</sup> century, but featuring reused Norman masonry. A square font internally dates to <i>c</i> . 1200. The tower, which once stood west of present west wall, is recorded as having fallen in <i>c</i> . 1700, and was never rebuilt.  The setting of the church is one of relative isolation, and it has a rural feel, set within its surrounding graveyard. Under Scenario 2, the LVIA ZTV (Chapter 29, Figure 29.5) suggests low intervisibility between the building and the onshore project substation located approx. 1.7 km to the south. Under Scenario 1, the LVIA ZTV (Chapter 29, Figure 29.16) suggests that combined low visibility of the Norfolk Boreas and Norfolk Vanguard onshore project substations may be possible from this location. However, as noted above, the tower does not survive and there are no views from ground level, as these are well-screened by intervening vegetation, trees and hedgerows and the A47. Other intervening features of note further to the south are the existing 400kV overhead powerlines and Necton Wood.  No further action required.		

Church of St. Mary, Fransham (35). Photo taken looking c. north.





HERITAGE SETTINGS	ERITAGE SETTINGS ASSESSMENT (ONSHORE PROJECT SUBSTATION AND ASSOCIATED INFRASTRUCTURE RELATED) WORKINGS:				
Heritage Asset: RHDHV ID NO. / Other ID NO's.	Reason for Initial Consideration.	Description of the Heritage Assets and their Settings / Comment on Intervisibility / Identification of any Further Action Required.	Supporting Visuals / Visualisations, if applicable.		
			Church of St. Mary, Fransham (35). Photo taken looking c. south-east.		
Church of All Saints, Necton (36). List Entry No. = 1152204 NHER = 4642	Grade I Listed Building.  Highly Designated Heritage Asset in Proximity to the Onshore Project Substation.  LVIA Cultural Heritage Specific Viewpoint Location: CH2	The Parish Church of All Saints, Necton was first listed in June 1960.  The fabric of the church is mostly of 14 <sup>th</sup> and 15 <sup>th</sup> century date with 19 <sup>th</sup> century additions, during which the roof was repainted and the tower was rebuilt and strengthened to hold two new bells. The south porch is recorded as having been demolished and replaced by a mausoleum designed by the architect Pugin. The church has a semi-urban setting but is set within a large graveyard containing and surrounded by numerous trees and is located within Necton Conservation Area.  Under Scenario 2, the LVIA ZTV (Chapter 29, Figure 29.5) suggests medium to low intervisibility between the building and the onshore project substation located approx. 2 km to the north-east. Under Scenario 1, the LVIA ZTV (Chapter 29, Figure 29.16) suggests that combined low visibility of the Norfolk Boreas and Norfolk Vanguard onshore project substations may be possible from this location. However, the church is very well-screened by intervening vegetation, trees, hedgerows and built form. Whilst views towards the substation site may be afforded from the top of the tower, there are no views in that direction from ground level. Any such views would also encompass the existing Dudgeon and National Grid substation sites at Necton and the 400kV overhead powerlines. The tower is not believed to be publicly accessible.  Some of the better longer distance views of the church are afforded from the north-west. For example travelling east along the A47 (there is a layby) from which looking south-east across the open fieldscape the church tower can be seen and well appreciated, albeit with the associated traffic noise.  No further action considered to be required.	See Figure 28.1a (map 9), b and c and Figure 28.5. + Cultural Heritage Viewpoint No. CH2.  Church of All Saints, Necton (36). Photo taken looking c. north.		





HERITAGE SETTINGS	ERITAGE SETTINGS ASSESSMENT (ONSHORE PROJECT SUBSTATION AND ASSOCIATED INFRASTRUCTURE RELATED) WORKINGS:				
Heritage Asset: RHDHV ID NO. / Other ID NO's.	Reason for Initial Consideration.	Description of the Heritage Assets and their Settings / Comment on Intervisibility / Identification of any Further Action Required.	Supporting Visuals / Visualisations, if applicable.		
		Cultural Heritage Viewpoint No. 2 (CH2) (see below within this Appendix) shows no visibility.	Photo taken looking c. NE from the grounds of the Church of All Saints, Necton (36).  Taken towards the direction of the onshore project substation site.		
The Old Hall, Fransham (58).  List Entry No. = 1152599  NHER = 7293	Grade II* Listed Building.  Highly Designated Heritage Asset in Proximity to the Onshore Project Substation.  LVIA Cultural Heritage Specific Viewpoint Location: CH3	The Old Hall, (Little) Fransham was first listed in December 1951.  A farmhouse dating to the 16 <sup>th</sup> century with later 17 <sup>th</sup> and 18 <sup>th</sup> century alterations. The house has a moulded brick pediment with a stucco panel bearing the Arms of Elizabeth I, who is alleged to have stayed here. An unusual barn to the south of the hall also dates to the mid-16 <sup>th</sup> century and may have been a service building converted to agricultural use, before being partially rebuilt in the 19 <sup>th</sup> century as a threshing barn.  Under Scenario 2, the LVIA ZTV (Chapter 29, Figure 29.5) suggests medium to low intervisibility between the building and the onshore project substation located approx. 1.3 km to the south. Cultural Heritage Viewpoint No. 3 (CH3) (see below within this Appendix) has confirmed that there is no intervisibility from this location, as the development is concealed by tree cover.  No visibility of the onshore project substation is shown from CH3 under Scenario 1, although the LVIA ZTV (Chapter 29, Figure 29.16) does suggest that combined low visibility of the Norfolk Boreas and Norfolk Vanguard onshore project substations may be possible from this location. However, the building is believed to be well-screened by intervening vegetation, trees, hedgerows and built form, including woodland blocks, not least Necton Wood. Although some isolated views towards the substation site may be afforded from certain locations across the farm complex, this must be taken within the context of other existing large modern farm buildings (barns and silos) within the immediate setting of Old Hall Farm, as well as the large 400kV powerlines running east - west further to the south, adjacent to Necton Wood on its northern side.	See Figure 28.1a (map 9), b and c and Figure 28.5. + Cultural Heritage Viewpoint No. CH3.  Private Residence. No Image Available – on English Heritage (now Historic England) Images of England Project: (www.imagesofengland.org.uk).		





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Heritage Asset: RHDHV ID NO. / Other ID NO's.	Reason for Initial Consideration.	Description of the Heritage Assets and their Settings / Comment on Intervisibility / Identification of any Further Action Required.	Supporting Visuals / Visualisations, if applicable.			
		No further action considered to be required.				
Bradenham Hall (347). .ist Entry No. = 1304966 NHER = 8718	Grade II Listed Building.  Designated Heritage Asset in Proximity to the Onshore Project Substation.	Bradenham Hall was first listed in July 1951. In 1986 relisting is recorded as having downgraded the property from Grade II* to Grade II.  The hall is believed to have been built in c. 1766 and was a replacement for the building originally surrounded by the nearby medieval moat (NHER 8717). The building is of red brick with giant pilasters and a pediment. It is understood that there were substantial 20 <sup>th</sup> century changes to the property. The writer Rider-Haggard (English author) was born here and it is recorded that at some point Nelson stayed at the house.  The hall is surrounded by an associated landscape park, including grassland, parkland and plantations. The landscape park is not on the County or National Register of Parks and Gardens, and some former parkland areas are now under arable.  Under both Scenarios, the LVIA ZTV (Chapter 29, Figure 29.5 and Figure 29.16) suggests no intervisibility between the Building and the onshore project substation located approx. 1.9 km or 1.7km to the west / northwest under Scenario 2 and 1 respectively. The building is well screened by intervening woodland blocks on its west side and further afield by Great Wood, and other vegetation, trees and hedgerows.  No further action required.	See Figure 28.1a (map 9), b and c and Figure 28.5.  Private Residence. No Image Available - English Heritage (now Historic England) Images of England Project: (www.imagesofengland.org.uk).			
SEE BELOW: Other A	-	of Substation Related Heritage Setting Considerations (not detailed - but on a precautionary	• • • • • • • • • • • • • • • • • • • •			
Church of St. Mary, Bradenham (1825). List Entry No. = 1151958 NHER = 8703	LVIA precautionary cross check only.  LVIA Cultural Heritage Specific Viewpoint Location: CH4	consultant project team, and as such is included as a representative heritage specific viewpoint location (CH4).	See Figure 28.5 + Cultural Heritage Viewpoint No. CH4.  Image of - CHURCH OF ST MARY, BRADENHAM.  Available via English Heritage Images of England Project 2001  (www.imagesofengland.org.uk).			





HERITAGE SETTINGS	HERITAGE SETTINGS ASSESSMENT (ONSHORE PROJECT SUBSTATION AND ASSOCIATED INFRASTRUCTURE RELATED) WORKINGS:				
Heritage Asset: RHDHV ID NO. / Other ID NO's.	Reason for Initial Consideration.	Description of the Heritage Assets and their Settings / Comment on Intervisibility / Identification of any Further Action Required.	Supporting Visuals / Visualisations, if applicable.		
	LVIA Viewpoint (10)	See also: Hale Road, East of Holme Hale - LVIA Viewpoint (10).	Available via English Heritage Images of England Project 2001 (www.imagesofengland.org.uk).		
Church of St. Andrew, Holme Hale (1826).	Grade I Listed Building.  LVIA precautionary cross check only.	The site was visited by the LVIA consultant project team in March 2018, at the request of the heritage consultant project team, and as such is included as a representative heritage specific viewpoint location (CH5).  This has confirmed that there is no visibility from this location under either Scenario, as the development is concealed by landform and tree cover.	See Figure 28.5 + Cultural Heritage Viewpoint No. CH5.  Image of - CHURCH OF ST ANDREW, CHURCH ROAD (south side).  Available via English Heritage Images of England Project 2001 (www.imagesofengland.org.uk).		
List Entry No. = 1152077 NHER = 4643	LVIA Cultural Heritage Specific Viewpoint Location: CH5	No further action required.  Cultural Heritage Viewpoint No.5 (CH5) (see below within this Appendix) shows no visibility.			
		There is no visibility from this location under either Scenario, as the development is concealed by landform	See Figure 28.1a (map 9), b and c and Figure 28.5.		
Wendling Abbey (Priory) (4).	Scheduled Monument.	No further action required.			
List Entry No. = 1003964 NHER = 7281	LVIA precautionary cross check only.		Wendling Abbey (4) isolated masonry remains.		



HERITAGE SETTINGS ASSESSMENT (ONSHORE PROJECT SUBSTATION AND ASSOCIATED INFRASTRUCTURE RELATED) WORKINGS:									
Heritage Asset: RHDHV ID NO. / Other ID NO's.	Reason for Initial Consideration.	Description of the Heritage Assets and their Settings / Comment on Intervisibility / Identification of any Further Action Required.	Supporting Visuals / Visualisations, if applicable.						
			Wendling Abbey (4) surviving earthworks.						
Church of All Saints, (Great) Fransham (1827). List Entry No. = 1077471 NHER = 4206	Grade II* Listed Building.  LVIA precautionary cross check only.	There is no visibility from this location under either Scenario, as the development is concealed by landform and tree cover.  No further action required.	See Figure 28.5.  Church of All Saints, Great Fransham (1827). Photo taken looking c. east.						





HERITAGE SETTINGS ASSESSMENT (ONSHORE PROJECT SUBSTATION AND ASSOCIATED INFRASTRUCTURE RELATED) WORKINGS:								
Heritage Asset: RHDHV ID NO. / Other ID NO's.	Reason for Initial Consideration.	Description of the Heritage Assets and their Settings / Comment on Intervisibility / Identification of any Further Action Required.	Supporting Visuals / Visualisations, if applicable.					
			Photo taken looking c. south from the grounds of the Church of All Saints, Great Fransham (1827).  Taken in the general direction of the onshore project substation site.					



#### **2** Cultural Heritage Specific Viewpoints

26. The following table defines the location of the Cultural Heritage Specific Viewpoints (CH1 to 5) assessed within this Appendix and Chapter 28 of the ES. In each case, a photomontage is provided below.

**Table 2.1 Locations of Cultural Heritage Specific Viewpoints** 

View pint Neme	Cultural Heritage	British National Grid (BNG)	
Viewpoint Name	Viewpoint No.	Easting	Northing
Church of St Andrew, Bradenham (34)	CH1	591711	309148
All Saints, Necton (36)	CH2	587872	309726
Old Hall, Fransham (58)	CH3	590191	311793
The Church of St Mary, Bradenham (1825)	CH4	593069	308410
The Church of St Andrew, Holme Hale (1826)	CH5	588711	307543

#### 2.1 LVIA Methodology Statement for Cultural Heritage Visualisations

- 27. The viewpoint assessment is illustrated by a range of visualisations, including photographs and photomontages, which accord with Scottish Natural Heritage's Visual Representation of Wind Farms Version 2.2 (Scottish Natural Heritage, 2017). In the absence of detailed guidance on the production of photomontages for non-wind farm developments, the Landscape Institute (LI) in its Advice Note 01/11 makes the following comment:
- 28. "Scottish Natural Heritage's Visual representation of windfarms: good practice guidance states that the guidance may also be applicable to other forms of development or within other locations. The LI endorses this guidance and strongly advises members to follow this where applicable in preference to any other guidance or methodology."
- 29. Although the onshore elements of the project do not constitute a wind farm, the Scottish Natural Heritage guidance has been applied in the production of the photomontages. The 53.5-degree field of view frames show an enlarged image of the development, which is considered the most authentic in conveying the likely actual scale that would be experienced on site. A 90-degree baseline photograph frame has also been included to illustrate the wider context of the views experienced from each viewpoint.
- 30. Visualisations of energy developments have a number of limitations when using them to form a judgement on the effects of this type of development. These include:



- 31. A visualisation can never show exactly what the energy development will look like in reality due to factors such as: different lighting, weather and seasonal conditions which vary through time and the resolution of the image:
  - The images give a reasonable impression of the scale of the energy developments and the distance from the viewpoint and, whilst they have been produced to accord with best practice guidance, can never be 100% accurate;
  - The viewpoints illustrated are representative of views in the area, but cannot represent visibility at all locations;
  - To form the best impression of the impacts of the development these images are best viewed in the field at the viewpoint location shown; and
  - The visualisations must be printed at the right size to be viewed properly (A1 width) and viewed at a comfortable viewing distance.
- 32. The photographs used to produce the photomontages have been taken using Canon EOS 5D and 6D Digital SLR cameras, with a fixed lens and a full-frame (35mm negative size) CMOS sensor. The photographs are taken on a tripod with a panohead at a height of approximately 1.5m above ground.
- 33. To create the baseline panorama, the frames are individually cylindrically-projected and then digitally joined to create a fully cylindrically-projected panorama using Adobe Photoshop or PTGui software. This process avoids the wide-angle effect that would result should these frames be arranged in a perspective projection, whereby the image is not faceted to allow for the cylindrical nature of the full 360-degree view but appears essentially as a flat plane. These should be viewed flat at a comfortable arm's length. These images are each printed on paper 841 x 297 mm (half A1), which provides for a relatively large-scale image.
- 34. Tonal alterations are made using Adobe Photoshop software to create an even range of tones across the photographs once joined.
- 35. 3D model views that illustrate the onshore project substation and National Grid substation extension within a computer-generated image of the landform are used in the assessment to present an indicative appearance of the project. These are produced with Visual Nature Studio software and are based on the OS Terrain 5 digital terrain model. There are limitations in the accuracy of DTM data so that finer elements of landform may not be picked up precisely and may result in parts of the onshore project substation or National Grid substation extension, being more or less visible than is shown, however, the use of OS Terrain 5 minimises these limitations. Where descriptions within the assessment identify the extent of onshore infrastructure visible this refers to the illustrations generated and therefore the reality may differ to a degree from these impressions. The modifications to the



overhead line, which include an incremental change in the location and height of one tower and the addition of another tower, are included in the ES photomontages.

- 36. Photomontages have been produced for the Cultural Heritage viewpoints, using Adobe Photoshop software, to provide a realistic image of the appearance of the proposal. Only in viewpoint CH 1, these include the introduction of the onshore project substations, as this is the only component visible. The location and scale of the computer-generated model has been verified using markers such as the existing transmission towers, the existing substations, church towers and other fixed built features in the landscape.
- 37. Each photomontage is presented on A1 width paper in planar projection with a 53.5 degree horizontal field of view and an image size of 260mm x 820mm. These should be viewed flat at a comfortable arms-length.
- 38. The photographs and photomontages used in this assessment are for illustrative purposes only and, whilst useful tools in the assessment, are not considered to be completely representative of what will be apparent to the human eye. The assessments are carried out from observations in the field and therefore may include elements that are not visible in the photographs.
- 39. GPS readings and accurate aerial photography have been used to verify viewpoint locations and markers within the OS terrain model, which is referenced to the OS British National Grid coordinate system.



#### 3 References

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https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/6077/2 116950.pdf Accessed: 10/05/2017.

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Historic England (2017). The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (Second Edition), [Online], Available: https://content.historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/heag180-gpa3-setting-heritage-assets.pdf/ Accessed: 06/03/2018.

Historic England Images of England Project (2014), [online], Available: https://www.imagesofengland.org.uk. Accessed: 06/03/2018.

Scottish Natural Heritage (2017). Visual Representation of wind farms: Version 2.2.



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591713 E 309141 N 62 m AOD OS reference: Eye level: Direction of view: 303°
Nearest substation: 1.58 km

Horizontal field of view: 90° (cylindrical projection)
Principal viewing distance: 522 mm

Camera: Lens: Camera height:

Date and time:

Canon EOS 5D Mark II 50mm (Canon EF 50mm f/1.4) 1.5 m AGL 25/03/2018, 10:59:28

Viewpoint CH1: Church of St. Andrew, Bradenham



587880 E 309757 N 51.8 m AOD OS reference: Eye level: Direction of view: 67°
Nearest substation: 2.1 km

Horizontal field of view: 90° (cylindrical projection)
Principal viewing distance: 522 mm

Camera:

Camera height:

Date and time:

Lens:

Canon EOS 5D Mark II 50mm (Canon EF 50mm f/1.4) 1.5 m AGL 25/03/2018, 10:06:09

Viewpoint CH2: All Saints, Necton



590191 E 311793 N 76.3 m AOD Direction of view: Nearest substation: 1.26 km

Horizontal field of view: 90° (cylindrical projection)
Principal viewing distance: 522 mm

Camera: Camera height: Date and time:

Canon EOS 5D Mark II 50mm (Canon EF 50mm f/1.4) 1.5 m AGL 25/03/2018, 12:44:25

Viewpoint CH3: Old Hall, Fransham



593069 E 308410 N 65 m AOD OS reference: Eye level: Direction of view: 301°
Nearest substation: 3.11 km

Horizontal field of view: 90° (cylindrical projection)
Principal viewing distance: 522 mm

Camera: Camera height:

Canon EOS 5D Mark II 50mm (Canon EF 50mm f/1.4) 1.5 m AGL 25/03/2018, 10:42:47

Viewpoint CH4: The Church of Mary, Bradenham



588712 E 307541 N 53.6 m AOD OS reference: Eye level: Direction of view: 17°
Nearest substation: 3.02 km

Horizontal field of view: 90° (cylindrical projection)
Principal viewing distance: 522 mm

Camera: Camera height:

Canon EOS 5D Mark II 50mm (Canon EF 50mm f/1.4) 1.5 m AGL 25/03/2018, 10:24:05 Date and time:

Viewpoint CH5: The Church of St Andrew, Holme Hale



591713 E 309141 N 62 m AOD OS reference: Eye level: Direction of view: 303°
Nearest substation: 1.58 km

Horizontal field of view: 90° (cylindrical projection)
Principal viewing distance: 522 mm

Camera: Lens: Camera height:

Canon EOS 5D Mark II 50mm (Canon EF 50mm f/1.4) 1.5 m AGL 25/03/2018, 10:59:28 Date and time:

Viewpoint CH1: Church of St. Andrew, Bradenham



587880 E 309757 N 51.8 m AOD OS reference: Eye level: Direction of view: 67°
Nearest substation: 2.1 km

Horizontal field of view: 90° (cylindrical projection)
Principal viewing distance: 522 mm

Canon EOS 5D Mark II 50mm (Canon EF 50mm f/1.4) Camera height: 1.5 m AGL 25/03/2018, 10:06:09 Date and time:

Camera:

Lens:

Viewpoint CH2: All Saints, Necton



590191 E 311793 N 76.3 m AOD Direction of view: Nearest substation: 1.26 km

Horizontal field of view: 90° (cylindrical projection)
Principal viewing distance: 522 mm

Camera height:

Canon EOS 5D Mark II 50mm (Canon EF 50mm f/1.4) 1.5 m AGL 25/03/2018, 12:44:25

Viewpoint CH3: Old Hall, Fransham



593069 E 308410 N 65 m AOD OS reference: Eye level: Direction of view: 301°
Nearest substation: 3.11 km

Horizontal field of view: 90° (cylindrical projection)
Principal viewing distance: 522 mm

Camera: Camera height:

Canon EOS 5D Mark II 50mm (Canon EF 50mm f/1.4) 1.5 m AGL 25/03/2018, 10:42:47

Viewpoint CH4: The Church of Mary, Bradenham



588712 E 307541 N 53.6 m AOD OS reference: Eye level: Direction of view: 17°
Nearest substation: 3.02 km

Horizontal field of view: 90° (cylindrical projection)
Principal viewing distance: 522 mm

Camera: Camera height:

Canon EOS 5D Mark II 50mm (Canon EF 50mm f/1.4) 1.5 m AGL 25/03/2018, 10:24:05 Date and time:

Viewpoint CH5: The Church of St Andrew, Holme Hale