East Anglia ONE North Offshore Windfarm

Chapter 29

Landscape and Visual Impact Assessment

Preliminary Environmental Information
Volume 1
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Prepared by:	Checked by:	Approved by:
Paolo Pizzolla 2019.01.10 16:12:06 Z	Ian Mackay 2019.01.11 11:27:37 Z	Helen Walker 2019.01.11 13:01:47 Z

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Glossary of Acronyms

AONB	Area of Outstanding Natural Beauty
AIS	Air-Insulated Substation
CA	Conservation Area
CIA	Cumulative Impact Assessment
CCS	Construction Consolidation Sites
DAS	Design and Access Statement
DCO	Development Consent Order
EIA	Environmental Impact Assessment
EPP	Evidence Plan Process
ETG	Expert Topic Group
ES	Environmental Statement
GIS	Geographical Information System
GIS (building)	Gas Insulated Substation (building)
GLVIA	Guidelines for Landscape and Visual Impact Assessment
HDD	Horizontal Directional Drilling
HE	Historic England
HVAC	High Voltage Alternating Current
LCA	Landscape Character Assessment
LCT	Landscape Character Type
LCU	Landscape Character Units
LI	Landscape Institute
LVIA	Landscape and Visual Impact Assessment
NCA	National Character Areas
NP	National Park
NPS	National Policy Statement
NE	Natural England
OCOCP	Outline Code of Construction Practice
OLEMS	Outline Landscape and Ecology Management Strategy
OS	Ordnance Survey
PEIR	Preliminary Environmental Information Report
PRoW	Public Rights of Way
RPG	Registered Park and Garden
SNH	Scottish Natural Heritage
SoS	Secretary of State
SuDS	Sustainable Drainage System
WCA	Worst Case Assumption

Glossary of Terminology

Applicant	East Anglia ONE North Limited.
Construction consolidation sites	Compounds which will contain laydown, storage and work areas for onshore construction works. The HDD construction compound will also be referred to as a construction consolidation site.
Development area	The area comprising the proposed onshore development area and the offshore development area
East Anglia ONE North project	The proposed project consisting of up to 67 wind turbines, up to four offshore electrical platforms, up to one offshore construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
European site	Sites designated for nature conservation under the Habitats Directive and Birds Directive, as defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017 and regulation 18 of the Conservation of Offshore Marine Habitats and Species Regulations 2017. These include candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and Special Protection Areas.
Evidence Plan Process	A voluntary consultation process with specialist stakeholders to agree the approach to the EIA and the information required to support HRA.
Horizontal directional drilling (HDD)	A method of cable installation where the cable is drilled beneath a feature without the need for trenching.
Jointing bay	Underground structures constructed at regular intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Landfall	The area (from Mean Low Water Springs) where the offshore export cables would make contact with land, and connect to the onshore cables.
Link boxes	Underground chambers or above ground cabinets next to the cable trench housing electrical earthing links.
Mitigation areas	Areas captured within the Development Area specifically for mitigating expected or anticipated impacts.
National Grid infrastructure	A National Grid substation, connection to the existing electricity pylons and National Grid overhead line realignment works which will be consented as part of the proposed East Anglia ONE North project Development Consent Order but will be National Grid owned assets.
National Grid overhead line realignment works	Works required to upgrade the existing electricity pylons and overhead lines to transport electricity from the National Grid substation to the national electricity grid
National Grid overhead line realignment works area	The proposed area for National Grid overhead line realignment works.

National Grid substation	The substation (including all of the electrical equipment within it) necessary to connect the electricity generated by the proposed East Anglia ONE North project to the national electricity grid which will be owned by National Grid but is being consented as part of the proposed East Anglia ONE North Project Development Consent Order.
National Grid substation location	The proposed location of the National Grid substation.
Natura 2000 site	A site forming part of the network of sites made up of Special Areas of Conservation and Special Protection Areas designated respectively under the Habitats Directive and Birds Directive.
Onshore cable corridor	The corridor within which the onshore cable route will be located.
Onshore cable route	This is the construction swathe within the onshore cable corridor which would contain onshore cables as well as temporary ground required for construction which includes cable trenches, haul road and spoil storage areas.
Onshore cables	The cables which would bring electricity from landfall to the onshore substation. The onshore cable is comprised of up to six power cables and two fibre optic cables.
Proposed onshore development area	The area in which the landfall, onshore cable corridor, onshore substation, mitigation areas, temporary construction facilities (such as access roads and construction consolidation sites), and the National Grid Infrastructure will be located.
Onshore infrastructure	The combined name for all of the onshore infrastructure associated with the proposed East Anglia ONE North project from landfall to the connection to the national electricity grid.
Onshore substation	The East Anglia ONE North substation and all of the electrical equipment, both within and connecting to the National Grid infrastructure.
Onshore substation location	The proposed location of the onshore substation for the proposed East Anglia ONE North project.
SuDS – Sustainable Drainage System	Approaches to manage surface water that take account of water quantity (flooding), water quality (pollution) biodiversity (wildlife and plants) and amenity
Transition bay	Underground structures at the landfall that house the joints between the offshore export cables and the onshore cables.

29 Landscape and Visual Impact

29.1 Introduction

1. This Landscape and Visual Impact Assessment (LVIA) forms part of the Preliminary Environmental Information Report (PEIR) and assesses the likely significant effects on landscape character and visual amenity arising as a result of the onshore infrastructure associated with the proposed East Anglia ONE North project. It has been authored by chartered landscape architects at Optimised Environments (OPEN). The chapter provides an overview of the existing baseline of the LVIA study area, followed by an assessment of the potential effects associated with the construction, operation, and decommissioning of the proposed East Anglia ONE North project, with consideration of embedded landscape mitigation. LVIA guidance uses the term "effect" rather than impact, so this is used throughout the chapter in order to be compliant with policy and guidance.

2. The assessment also considers cumulative impacts of other proposed projects. The proposed methodology adhered to for the Environmental Impact Assessment (EIA) and Cumulative Impact Assessment (CIA) is presented in ***section 29.4.***

3. The assessment has been prepared in accordance with National Policy Statements (NPSs) with specific reference to Overarching NPS for Energy (NPS EN-1) (July 2011) and Guidelines for Landscape and Visual Impact Assessment (GLVIA3) (Landscape Institute 2013).

4. This chapter should be read in conjunction with the maps and visualisations presented on ***Figures 29.1*** to ***29.25*** as these form an integral part of the assessment.

5. The detailed methodology, preliminary assessments and technical landscape, visual and cumulative assessments are provided separately in the following appendices:

   - ***Appendix 29.1: Methodology;***
   - ***Appendix 29.2: Landscape Assessment;***
   - ***Appendix 29.3: Visual Assessment;*** and
   - ***Appendix 29.4: Cumulative Assessment.***

6. These appendices assess, in full technical detail, the likely significant effects of the proposed East Anglia ONE North onshore infrastructure. This chapter

provides a summary of the significant effects identified in the technical assessments contained within ***Appendix 29.2 – 29.4***.

7. This chapter should also be read in conjunction with ***Chapter 28 Offshore Seascape, Landscape and Visual Amenity***, ***Chapter 22 Onshore Ecology*** and ***Chapter 24 Archaeology and Cultural Heritage*** due to the close association between seascape, landscape and visual considerations, onshore ecology and cultural heritage. These inter-relationships are also described in ***section 29.8***.

29.1.1 Impact Assessment Scenarios

8. The LVIA provides a project alone assessment of the landscape and visual impact of the proposed East Anglia ONE North onshore infrastructure. The landscape and visual effects of the proposed East Anglia ONE North onshore substation and National Grid substation are assessed together in the LVIA.

9. Cumulative impact assessment scenarios for the construction of the proposed East Anglia ONE North and proposed East Anglia TWO projects are assessed separately in ***Appendix 29.4*** in two scenarios:

- Scenario 1 – East Anglia ONE North and East Anglia TWO projects are constructed at the same time.
- Scenario 2 – East Anglia ONE North project is built entirely and land is re-instated, then East Anglia TWO project is constructed.

10. The operational phase cumulative landscape and visual impact will be the same irrespective of the construction scenario and assesses the impact of the operation of the proposed East Anglia ONE North substation, proposed East Anglia TWO substation and National Grid substation.

29.1.2 Matters Scoped out of the EIA

11. The Planning Inspectorate (2017) has provided comments in their scoping opinion on matters that can be scoped out of the EIA and has agreed that the following landscape and visual matters can be scoped out of the assessment:

- Landscape and visual impacts of the landfall during operation.
- Landscape and visual impact of the onshore cable route during operation (with the exception of the removal of woodland at the Aldeburgh Road crossing (Raidsend) which is assessed as an operational impact following consultation through the LVIA Expert Topic Group).

12. In both cases, following reinstatement works, the underground infrastructure at the landfall and within the onshore cable route is unlikely to result in significant effects and these matters can be scoped out of the assessment, as agreed with the Planning Inspectorate. These matters are not assessed any further in the technical assessments in ***Appendix 29.2 – 29.4*** and in this chapter.

13. Transboundary effects have been scoped out of the LVIA since there is no potential for transboundary landscape and visual effects to arise as a result of the onshore infrastructure.

29.2 Consultation

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

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

16. ***Table 29.1*** provides a summary of those consultation responses that have been received and are relevant to LVIA. Responses from stakeholders have been captured in the table below.

Table 29.1 Consultation Comments

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
The Planning Inspectorate	20/12/2017 Scoping Response	The Inspectorate agrees that following remediation works the underground infrastructure at the landfall is unlikely to result in significant effects and this matter can be scoped out of the assessment.	***Section 29.1***
The Planning Inspectorate	20/12/2017 Scoping Response	The Inspectorate agrees that following remediation works the underground infrastructure on the onshore cable route is unlikely to result in significant effects and this matter can be scoped out of the assessment.	***Section 29.1***

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
The Planning Inspectorate	20/12/2017 Scoping Response	Cumulative landscape and visual impacts of landfall options and onshore cable route during all phases. The Inspectorate does not agree that this can be scoped out. The Inspectorate is aware of potential further developments such as Sizewell New Nuclear Power Station, and furthermore, the landfall is not yet finalised.	Cumulative landscape and visual effects assessed in ***Appendix 29.4*** and summarised in ***section 29.7*** of this chapter.
The Planning Inspectorate	20/12/2017 Scoping Response	Cumulative landscape and visual impacts of the onshore substation and National Grid infrastructure (within 3km buffer LVIA study area) during construction and decommissioning. The Inspectorate does not agree that this can be scoped out. As the location of such infrastructure including the substation is not yet known potential significant effects as a result of cumulative development cannot be predicted.	Cumulative landscape and visual effects assessed in ***Appendix 29.4*** and summarised in ***section 29.7*** of this chapter.
The Planning Inspectorate	20/12/2017 Scoping Response	Landscape and visual and cumulative impacts of the onshore infrastructure out with 3km buffer LVIA study area during all phases. The Inspectorate therefore does not agree that this can be scoped out. As the location of such infrastructure including the substation is not yet known potential significant effects as a result of cumulative development cannot be predicted.	LVIA study area defined as 3km buffer from the onshore infrastructure as shown in ***Figure 29.1*** as included in LVIA Method Statement and ETG consultations.
The Planning Inspectorate	20/12/2017 Scoping Response	The ES should ensure that all components of the Proposed Development are addressed by the assessment, for example, construction compounds. All works, temporary and permanent, should be clearly included in the assessment.	Onshore infrastructure including all works, temporary and permanent, including construction compounds for onshore substation, onshore cable route and landfall are assessed in full in ***Appendix 29.2-29.3*** and summarised in ***section 29.6*** of this chapter.
The Planning Inspectorate	20/12/2017 Scoping Response	The ES should explain the ZTV model used and the times of year that any surveys used to inform the assessment have been undertaken and the prevalent weather conditions.	***Appendix 29.1*** provides a detailed description of the assessment methodology which is

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
			summarised in ***section 29.4.6*** of this chapter.
The Planning Inspectorate	20/12/2017 Scoping Response	The viewpoints to be used for the assessment should be agreed with the relevant Local Planning Authority and NE in relation to the AONB.	Agreed viewpoints for the onshore LVIA listed in ***Table 29.7.***
The Planning Inspectorate	20/12/2017 Scoping Response	The Scoping Report sets out that the methodology will be in line with the GLVIA but no further information is included. The Inspectorate requires the ES to include photomontages at relevant viewpoints to be agreed with the Local Planning Authority	Viewpoints have been agreed with the ETG for the onshore LVIA as listed in ***Table 29.7.***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	The Environmental Statement should include details of the approach to visualisations.	Approach to visualisation production described in ***Appendix 29.1.***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	Definitions of duration of landscape and visual effects should be provided.	***Appendix 29.1*** and ***section 29.4.3.5*** of this chapter.
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	The following are essential: A realistic worst case scenario to be used; A clear definition of the range of susceptibility of landscape types. Thresholds of significance need to be agreed as part of the methodology prior to submission of the ES.	Realistic worst case scenario described ***section 29.3.2.*** Definition of susceptibility described ***Appendix 29.1.*** Thresholds of significance described in ***Appendix 29.1.***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	A full understanding and assessment of the proposed development on the Suffolk Coast and Heaths AONB Special Qualities Document is necessary to meet the requirements of EN3 (2.6.203), where assessment is required of people's perception and interaction with the seascape. The SLVIA will need to systematically assess the impacts of the proposal on the character and special qualities of the AONB.	Effects on special qualities of the AONB assessed in ***Appendix 29.2*** and summarised in ***section 29.6*** of this chapter.

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	The ES needs to assess the potential impact of the proposed development on the setting of the AONB as well as the AONB itself, as explained further in Position Statement: Setting of the Suffolk Coast & Heaths AONB.	Effects on setting of the AONB assessed in ***Appendix 29.2*** and summarised in ***section 29.6*** of this chapter.
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	Full assessment of combined onshore and offshore effects is critical where combined effects are experienced, either simultaneously or in near immediate sequence. Combined landscape and visual effects between offshore and onshore project components are likely to occur and the agreed methodology should allow evaluation of these combined effects.	Combined onshore and offshore effects are assessed in ***section 28.11 of Chapter 28 Seascape, Landscape and Visual Impact Assessment.***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	Future projects include the Nautilus interconnector. The applicant should not exclude the project from the CIA at this stage.	Nautilus interconnector excluded from cumulative LVIA. See ***section 28.11 of Chapter 28 Seascape, Landscape and Visual Impact Assessment.***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	The agreed approach to viewpoint selection and timing of baseline photography is an attempt by all parties to properly evaluate the impacts.	Viewpoint assessment from agreed viewpoints undertaken in ***Appendix 29.3*** and summarised in ***section 29.6*** of this chapter.
Suffolk County Council / Suffolk Coastal District Council	17/07/2018	We accept the submitted (onshore) viewpoint locations, but with following requested additions: Footpath T junction at GR425611 Footpath T junction at GR426606 Footpath road junction at GR421627 Footpath T junction at GR398625 Sloe Lane at GR399600 We also considered that the sealing in compound should be considered in the viewpoints and represented in the photo montages and wireframes. We further considered that the woodland belt crossing at Aldringham Court should also be included with a westward viewpoint from the B1122 and an eastward viewpoint from the footpath at GR444604.	13 viewpoints agreed with the ETG for the onshore LVIA as listed in ***Table 29.7*** *and shown in* ***Figure 29.4.*** At the time of this request it was not possible to obtain winter photos from the additional viewpoints. Therefore these additional viewpoints requested have not been included in this PEIR chapter but will be included in the ES.

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
Norfolk County Council	November 2017 Scoping Response	For both offshore and onshore development, the EIA/PEIR will need to provide: an assessment of the impact of the development on the landscape and seascape character.	Impacts on landscape character assessed in ***Appendix 29.2*** summarised in ***section 29.6*** of this chapter.
Norfolk County Council	November 2017 Scoping Response	An assessment of the visual impact which should include a ZTV and photomontages illustrating the impact of the development.	Visual effects assessed in ***Appendix 29.2*** and summarised in ***section 29.6*** of this chapter. ZTVs provided in ***Figures 29.7 – 29.9.*** Photomontages provided in ***Figures 29.13 – 29.25.***
Norfolk County Council	November 2017 Scoping Response	An assessment of the impact of the development on the heritage landscape.	Effects of the proposed development on cultural heritage are assessed in ***Chapter 24 Archaeology and Cultural Heritage*** *and inter-relationships of LVIA and heritage are described in* ***section 29.8.***
Natural England	08/12/2017 Scoping Response	Welcomes further information pertaining to the specific survey methodologies to be adopted for assessment of impacts and for a preliminary assessment of key potential impacts associated with the development.	LVIA Methodology described in ***Appendix 29.1.*** PEI assessments of landscape and visual effects provided in ***Appendix 29.2, 29.3 and 29.4*** and summarised in ***section 29.6*** of this chapter.
Natural England	08/12/2017 Scoping Response	The EIA should include a full assessment of the potential impacts of the development on local landscape character using landscape assessment methodologies. Natural England would wish to see details of local landscape character areas mapped at a scale appropriate to the development and reference to the relevant National Character Areas.	Effects on landscape character assessed in ***Appendix 29.2*** / summarised in ***section 29.6 of*** this chapter and shown in ***Figure 29.2.***
Natural England	08/12/2017 Scoping Response	The EIA should include assessments of visual effects on the surrounding area.	Visual effects assessed in ***Appendix 29.3*** and summarised in ***section 29.6*** of this chapter.
Natural England	08/12/2017	Natural England supports the use of the methodology set out in Guidelines	***Appendix 29.1.***

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
	Scoping Response	for Landscape and Visual Impact Assessment (GLVIA 3).	
Natural England	08/12/2017 Scoping Response	The LVIA should assess the impacts of the proposed East Anglia ONE North offshore windfarm on the special characteristics of the Suffolk Coast and Heaths AONB and the Suffolk Heritage Coast. Consideration should be given to the direct and indirect effect upon this designated landscape, in particular the effect upon its purpose for designation.	***Appendix 29.2*** and summarised in ***section 29.6*** of this chapter.
Expert Topic Group	27/04/2018 LVIA / SLVIA ETG Meeting	The format of the Onshore LVIA and Offshore SLVIA should be considered, with the potential for merging of the two topics to address the overlap of onshore and offshore landscape and visual effects.	Offshore SLVIA is contained in ***Chapter 28 Seascape, Landscape and Visual Impact Assessment*** and ***Appendices 28.1 – 28.6.*** Onshore LVIA is contained in ***Chapter 29*** and ***Appendix 29.2 – 29.4***. Inter-related effects of both offshore and onshore elements are assessed in ***section 28.8*** of ***Chapter 28 Seascape, Landscape and Visual Impact Assessment.***
Expert Topic Group	27/04/2018 LVIA / SLVIA ETG Meeting	Consultees requested clear documentation that explains what is to be assessed under each 'scenario' and for each application (EA1N and EA2).	Scenarios for the impact assessment contained in this LVIA are explained in ***section 29.1.1.***
Expert Topic Group	27/04/2018 LVIA / SLVIA ETG Meeting	Confirmed list of projects for cumulative assessment to be circulated to all ETG stakeholders. Requested that Greater Gabbard and Galloper wind farms are included in the SLVIA baseline. The stage two SZC consultation should inform the basis for the development of a worst-case scenario to deal with these cumulative impacts of the construction and operation of Sizewell C.	Agreed list of cumulative projects for assessment in the LVIA in ***Table 29.14.***
Expert Topic Group	27/04/2018 LVIA / SLVIA ETG Meeting	Agreed that definitions of duration (short, medium & long-term) should match those agreed in East Anglia	Definitions of duration match those agreed for East Anglia THREE project as set out in

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
		ONE and East Anglia THREE projects.	***section 29.4.3.5*** and ***Appendix 29.1.***

17. Ongoing public consultation has been conducted through a series of Public Information Days (PIDs) and Public Meetings. PIDs have been held throughout Suffolk in November 2017, March 2018, and June / July 2018 with further events planned in 2019. A series of stakeholder engagement events were also undertaken in October 2018 as part of consultation phase 3.5. These events were held to inform the public of potential changes to the onshore substation location. This consultation aims to ensure that community concerns are well understood and that site specific issues can be taken into account, where practicable. Consultation phases are explained further in ***Chapter 5 EIA Methodology***. Full details of the proposed East Anglia ONE North project consultation process will be presented in the Consultation Report, which will be submitted as part of the DCO application.

18. ***Table 29.2*** shows public consultation feedback pertaining to LVIA. Consultation phases are explained further in ***Chapter 4 Site Selection and Assessment of Alternatives.***

Table 29.2 Public Consultation Relevant to LVIA

Topic	Response / where addressed in the PEI
Phase 1	
• Visual impact of the substation and consideration in site selection • Concerns over light pollution (associated with construction works and onshore infrastructure) • Consideration of Special Landscape Areas (SLA) during the LVIA • Implications of localised woodland losses • Character and beauty of the AONB	Visual impacts assessment for the substation are given in ***section 29.6.1.3.2*** Operational impacts (including lighting) are considered in ***section 29.6.2***
Phase 2	
• Substation proximity to houses • Visual impact of proposed substation on Friston – screening requirements • Lighting should be minimised • Minimise height of any installations, adopt appropriate colour schemes and reducing the building footprints	Visual impacts assessment for the substation are given in ***section 29.6.1.3.2*** Site selection considerations are detailed further in ***Chapter 4 Site Selection***

Topic	Response / where addressed in the PEI
• Visual impact should be minimised by selecting sites that minimise the requirement for additional overhead lines	***and Assessment of Alternatives***
Phase 3	
• Concern over light pollution at substation and landfall • Flat landscape increasing impacts • Impact on rural setting • Visual impact and height of substation • Impact on views from church and village green • Visual disturbance of construction traffic at landfall • Visual impact of cable routing – areas of high landscape quality should be avoided • Visual impact of construction compounds and road widening	Visual impacts assessment for the substation are given in ***section 29.6.1.3.2*** Site selection considerations are detailed further in ***Chapter 4 Site Selection and Assessment of Alternatives***
Phase 3.5	
• Visual impact of re-routing power lines • Substation will ruin village scenery • Unsympathetic to natural landscape, substation on rising ground • Light pollution (including construction) • Current minimal light pollution around Friston • Screening will not be effective for years. • Impact on flat landscape • Unprecedented development in open countryside • Visual impact of haul roads • Visual impact of substation from the church and village green • Impact on views from Friston Moor	Visual impacts assessment for the substation and National Grid infrastructure (including potential works to overhead lines) are given in ***section 29.6.1.3.2*** Lighting effects have been taken into account within the assessment methodology. More detail is provided in ***Appendix 29.1***

29.3 Scope

29.3.1 Study Area

19. The LVIA study area extends to a 3km buffer from the proposed onshore development area as shown on ***Figure 29.1***. The LVIA study area defines a limit, based on professional judgement, beyond which it is considered unlikely for significant effects to arise. This judgement is based on knowledge of similar projects, and an understanding of the character of the local landscape and the scale of the construction and development proposed.

29.3.2 Worst Case Scenarios

20. This section identifies the realistic worst case parameters associated with the proposed East Anglia ONE North project alone. This includes all onshore infrastructure for the proposed East Anglia ONE North project and the National Grid infrastructure that the proposed East Anglia ONE North project will require for ultimate connection to national electricity grid.

21. ***Table 29.3*** identifies those realistic worst case parameters of the onshore infrastructure that are relevant to potential impacts on LVIA during construction, operation and decommissioning phases of the proposed East Anglia ONE North project. Please refer to ***Chapter 6 Project Description*** for more detail regarding specific actvities, and their durations, which fall within the construction phase.

Table 29.3 Realistic Worst Case Scenarios

Impact	Parameter	Notes
Construction		
Impacts related to the landfall	• The effect on the landscape element of agricultural land owing to the Horizontal Directional Drilling (HDD) temporary works area (7,000m^2), two transition bay excavation footprints (1,554m^2) and the temporary roads; • The effect on landscape character and visual amenity owing to the presence of the temporary, surfaced and fenced HDD temporary works area, associated security and task lighting and the presence of the HDD drilling rig, ducting materials and welfare facilities; • The effect on landscape character and visual amenity owing to the activity associated with the excavation and construction of the two transition bays, HDD drilling, pulling through of cables and construction of temporary roads; and • The effect on the visual amenity of walkers on the coastal path owing to the onshore construction works.	The potential landscape and visual effects of the landfall during the construction phase would relate principally to the features of the construction process. Landfall to be achieved via HDD. No beach access required. Further detail regarding construction footprints are provided in ***Chapter 6 Project Description***.
Impacts related to the onshore cable corridor	• The effect on the landscape element and landscape character and visual amenity of agricultural land owing to the topsoil strip of the approximately 32m wide onshore cable route; • The effect on the landscape element of agricultural land owing to the presence of the five construction consolidation	Onshore cable route construction footprint may be located anywhere within the proposed onshore development area. The location strategy for access routes, CCS and jointing bays will be to site them near to field

Impact	Parameter	Notes
	sites (CCS) (92,000m^2 in total), the jointing bays (20,520m^2 in total) and temporary roads; • The effect on the landscape element of hedgerows and tree removal owing to the excavation for the 16.1m wide onshore cable route and felling of mature woodland at Raidsend at Aldeburgh Road crossing; and • The effect on landscape character and landscape character and visual amenity owing to the presence and activity associated with the temporary, surfaced and fenced CCS, and HDD entrance and exit compounds, and their content of plant, materials and welfare facilities, and the temporary roads.	boundaries or roads as far as practically possible. Note that 9 access points have been proposed for the haul road, this will be confirmed post-PEIR. Further detail regarding construction footprints are provided in ***Chapter 6 Project Description***.
Impacts related to the onshore substation	• The effect of the loss of agricultural land owing to the installation of the onshore substation CCS (17,100m^2) and onshore substation permanent footprint (36,100m^2); • The effect of the loss of the edge of the woodland of Laurel Covert within the north-east corner of footprint of the onshore substation and areas of hedgerow and clusters of small trees that overlap with the construction compound and haul road; • The effect on landscape character and visual amenity owing to the presence of the surfaced and fenced onshore substation CCS, and the content of plant, materials and welfare facilities; • The effect on landscape character and visual amenity owing to the presence of the emerging onshore substation with GIS building height up to 15m, electrical infrastructure height up to 18m (such as shunt reactors, transformers, harmonic filters etc), over a 190m x 190m footprint; • The effect on landscape character and visual amenity owing to the activity associated with the installation of the onshore substation CCS, onshore substation permanent footprint and access road of the B1122 Saxmundham Road, vehicles, machinery and cranes;	The potential landscape and visual effects of the onshore substation during the construction phase will relate principally to the features of the construction process. Further detail regarding construction footprints are provided in ***Chapter 6 Project Description***.

Impact	Parameter	Notes
	• The construction of the onshore infrastructure will result in some changes in ground profiles within and immediately around the onshore substation and the stockpiling of subsoil/topsoil needed during the construction period. The construction of a Sustainable Drainage System (SuDS) pond will be required to provide a sustainable drainage solution for the onshore substation; and • Task and vehicle lighting may be used in the hours of darkness during approved working hours.	
Impacts related to the National Grid Infrastructure	• The effect on the loss of agricultural land owing to the installation of the National Grid substation CCS (43,750m^2) temporary construction compound and National Grid substation permanent footprint (45,500m^2); • The effect of the loss of existing hedgerow within the National Grid substation permanent footprint; • The effect on landscape character and visual amenity owing to the presence and activity of the surfaced and fenced National Grid substation CCS, with its content of plant, materials and welfare facilities; • The effect on landscape character and visual amenity owing to the presence of the emerging National Grid substation with Air Insulated Substation (AIS) building up to 13m in height; • The effect on landscape character and visual amenity owing to the activity associated with the installation of the National Grid CCS, National Grid substation permanent footprint and, shared access road and overhead line realignment works; • The construction of the onshore infrastructure will result in some changes in ground profiles within and immediately around the National Grid substation permanent footprint and the stockpiling of subsoil/topsoil needed during the construction period. The construction of a SuDS pond will be required to provide a sustainable	The option of a National Grid substation with GIS electrical infrastructure up to 16m in height is deemed not the worst case due to the reduced footprint (120m x 140m) compared to the AIS electrical infrastructure. For comparison, a set of visualisations from agreed Viewpoints with the National Grid substation with GIS electrical infrastructure have been produced in ***Figure 29.28*** to ***Figure 29.40***. These are for information purposes only to enable comparison of National Grid substation options. Further detail regarding construction footprints are provided in ***Chapter 6 Project Description***.

Impact	Parameter	Notes
	drainage solution for the National Grid substation; and • Task and vehicle lighting may be used in the hours of darkness during approved working hours.	
Operation		
Impacts related to the onshore cable corridor	• Permanent loss of 0.9ha of mature woodland as a result of the onshore cable route at Aldeburgh Road (Raidsend), on land to the south of Aldringham Court.	It should be noted that jointing bays will be underground – there will be no surface infrastructure.
Impacts related to the onshore substation	• The effect on landscape character and visual amenity owing to the presence of the onshore substation with buildings up to 15m in height and electrical infrastructure up to 18m and occupying a site of 190m x 190m; • The effect on landscape character and visual amenity owing to the presence of the new access road to the onshore substation off the B1122 Saxmundham Road; • The effect of the re-establishment of hedgerows around the perimeter of the onshore substation, and the re-instatement of hedgerows over the onshore cable route into the onshore substation; and • The establishment of substantial areas of new woodland planting around the onshore substation, as described in section 29.3.4 and shown in the landscape mitigation plan (***Figure 29.11***).	Note that the operational footprint is relevant to substation infrastructure and does not include the additional landscaping footprint (which will be agreed post-PEIR).
Impacts related to the National Grid Infrastructure	• The effect on landscape character and visual amenity owing to the presence of the National Grid substation (325m x 140m) with AIS building up to 13m in height; • The effect on landscape character and visual amenity owing to the presence of the new access road to the National Grid substation off the B1122 Saxmundham Road; and • The establishment of substantial areas of new woodland planting around the onshore substation and National Grid	Design for the required overhead line (OHL) realignment work (including cable sealing end CCSs and pylon realignment CCS) is currently on going. As more detail is made available, this will be fully assessed and included in the Environmental Statement (ES) and DCO application. However, indicative locations for cable sealing end CCSs and pylon relaigment CCS are shown in

Impact	Parameter	Notes
	substation, as described in ***section 29.3.4*** and shown in the landscape mitigation plan (***Figure 29.11***).	***Figure 6.6*** of ***Chapter 6 Project Description***.
Decommissioning		
No decision has been made regarding the final decommissioning policy for the onshore infrastructure as it is recognised that industry best practice, rules and legislation change over time. However, the onshore substation will likely be removed and be reused or recycled. It is expected that the onshore cables will be removed and recycled, with the transition bays and cable ducts (where used) left *in situ*. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. A decommissioning plan will be provided. As such, for the purposes of a worst-case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase.		

22. The onshore substation assessed in the LVIA (and shown in the visualisations in ***Figures 29.13 – 29.25***) is based on a Rochdale Envelope defined by a realistic worst-case 3D model representation of the onshore substation, with indicative dimensions for assessment as shown in ***Plate 29.1***. The Rochdale Envelope and assessments made are also informed by a maximum parameter block model representing the maximum height of the electrical infrastructure (18m), as represented by a dashed line in the visualisations in ***Figures 29.13 – 29.25.*** The same 3D model is used for both the East Anglia ONE North and East Anglia TWO onshore substations when undertaking the cumulative assessment presented in ***section 29.7***.

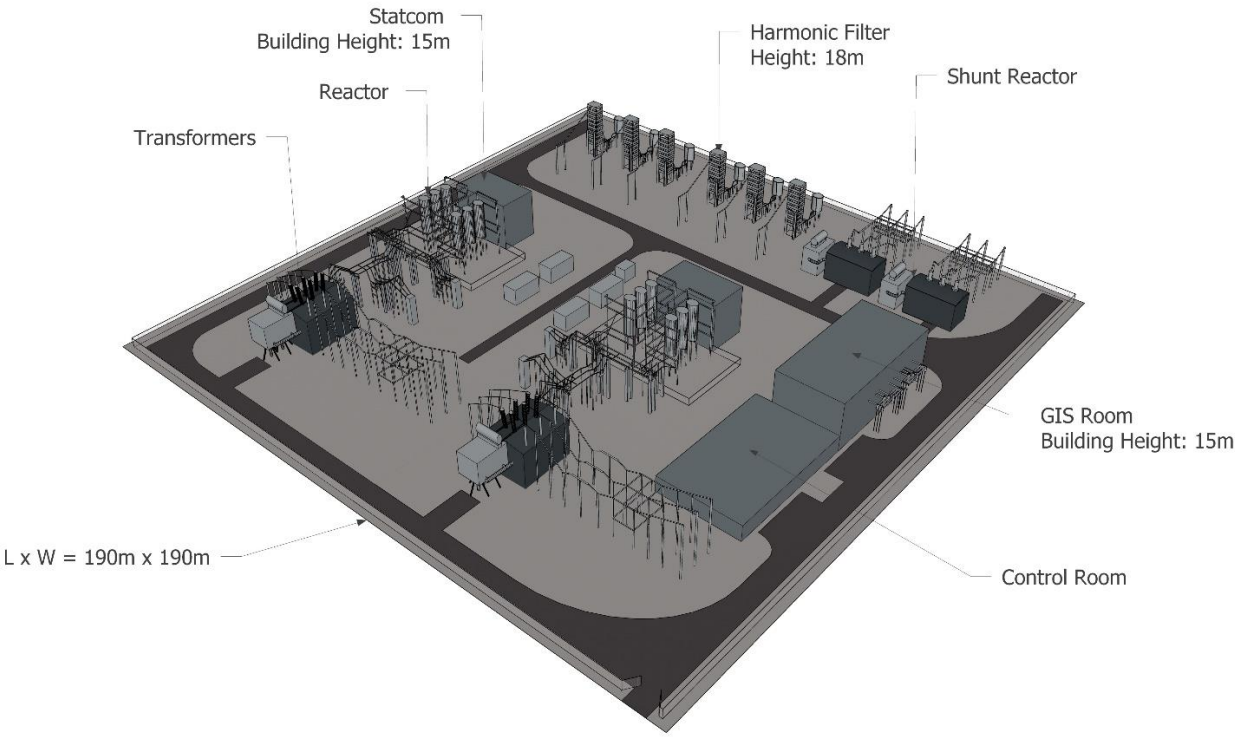

Plate 29.1 East Anglia ONE North Rochdale Envelope 3D Model

23. The National Grid substation shown in the visualisations is based on a Rochdale Envelope 'block-model' representing the maximum building height (13m) and footprint of a representative National Grid AIS. A more detailed 3D model of the National Grid substation is not available for the PEIR visualisations. As such, the 3D model of the National Grid substation shown in the visualisations (***Figures 29.13 – 29.25***) appears to have a more solid form or block massing than would, in reality, be the case for an AIS. Visualisations based on a detailed 3d model of the National Grid substation, to be provided by National Grid, will be included in the Environmental Statement.

29.3.3 Embedded Mitigation

24. Embedding mitigation into the proposed East Anglia ONE North project design is a type of primary mitigation and is an inherent aspect of the EIA process. ***Table 29.4*** below outlines the key embedded mitigation relevant for the LVIA, which are embedded in the assessment of landscape and visual impacts of the onshore infrastructure.

25. Where further landscape mitigation measures have also been developed into the design of the onshore infrastructure, with specific regard to potential effects on landscape character and visual amenity, these are described in ***section 29.3.3*** and assessed in the Technical Assessment presented in ***Appendix 29.2, 29.3*** and ***29.4***. Any further mitigation measures suggested within this section are

therefore considered as additional to the embedded mitigation described in ***Table 29.4.***

26. The sensitivity of the landscape and visual receptors in the LVIA study area has been a key consideration in the siting and design of the onshore infrastructure. Furthermore, the capacity of the landscape to accommodate the onshore infrastructure has been assessed in relation to the natural screening afforded by landform, woodlands, trees and hedgerows. An Outline Landscape and Ecological Management Strategy (OLEMS) will be prepared and included as part of the DCO application. This will set out suitable landscape and ecological mitigation proposals as required and included as part of the EIA.

Table 29.4 Embedded Mitigation Measures

Parameter	Mitigation Measures Embedded into the proposed East Anglia ONE North Project Design	Notes
General		
Site Selection	The proposed East Anglia ONE North project has undergone an extensive site selection process which has involved incorporating environmental considerations in collaboration with the engineering design requirements. Considerations include (but are not limited to) adhering to the Horlock Rules for onshore substations and National Grid infrastructure and developing construction methodologies to minimise the potential effects.	Constraints mapping and sensitive site selection to avoid a number of impacts, or to reduce impacts as far as possible, is a type of primary mitigation and is an inherent aspect of the EIA process. The Applicant has reviewed consultation received to feed into the site selection process (including local communities, landowners and regulators) and in light of the feedback, has made a number of decisions in relation to the siting of the onshore infrastructure. The site selection process is set out in ***Chapter 4 Site Selection and Assessment of Alternatives.***
Undergrounding of onshore cables	The decision to use underground cable systems for the onshore cables, avoids the requirement to construct new overhead lines. The mitigation embedded in this approach would lead to notably reduced impacts on landscape and visual receptors during the construction phase and practically no impacts during the operational phase. It also notably reduces the potential for the onshore cable route to contribute to significant cumulative effects. The construction works for the onshore cables would be notably smaller scale than those required to install new overhead lines and post construction the onshore cable route would have a negligible	n/a

Parameter	Mitigation Measures Embedded into the proposed East Anglia ONE North Project Design	Notes
	impact on landscape and visual receptors as the components for the onshore cables would be buried under ground.	
Landscape mitigation	Mitigation measures associated with the onshore substation and National Grid infrastructure form part of a strategic approach to enhancing landscape character and bio-diversity in the local area. ***Figure 29.11*** shows how mitigation planting would contribute to the wider landscape structure of the area and has been designed to screen the onshore project substation and help consolidate green corridors for wildlife. Details of the mitigation planting are presented in ***section 29.3.4***.	See ***section 29.3.4.***
Landfall site selection	The selection of the landfall site between Sizewell and Thorpeness followed a number of key design principles where practical, the following being relevant to LVIA. To avoid the most sensitive landscapes of the AONB. To avoid populated areas as far as possible. To avoid areas of high amenity value as far as possible. To set back sufficiently from the coastal edge and adjacent residential areas. The location of the transition bays will be suitably set back from the coastal cliffs would reduce visual impacts along the coast. The location of the transition bays, buried to ground or just below ground level, would ensure landscape and visual effects would only occur during the construction phase and not the operational phase.	n/a
Onshore cable route site selection	The selection of the onshore cable route has followed a number of key design principles, where practical, the following being relevant to LVIA; Wherever possible to locate the onshore cable route through open agricultural land. To avoid landscape designations including Registered Parks and Gardens (RPGs). To avoid areas of woodland and trees as far as possible. To minimise the number of hedgerow crossings and utilise existing gaps in field boundaries if possible.	n/a

Parameter	Mitigation Measures Embedded into the proposed East Anglia ONE North Project Design	Notes
	To avoid proximity to residential dwellings and settlements. The mitigation is embedded in the selection of a route which minimises effects on natural heritage designations (SSSI/SPA/SAC/Ramsar/NNR), minimises the effects on the AONB and physical effects on hedgerows and trees.	
Onshore substation and National Grid infrastructure site selection	National Grid's Guidelines on Substation Siting and Design (The Horlock Rules) have been taken into consideration during the site selection process. Those relevant to the LVIA include the following; To avoid landscape designations including National Parks and AONBs. To protect areas of local amenity value including ancient woodland and historic hedgerows. To take advantage of screening provided by landform and existing features. The selected onshore substation location avoids all international, national, county and local landscape designations. It does not affect any ancient woodland and mitigation measures ensure hedgerow loss which would occur is compensated for in new planting around the onshore substation. The site benefits from existing natural screening provided by Grove Wood and Laurel Covert, as well as other smaller tree blocks and hedgerows surrounding the site. These landscape features provide screening principally from the east and create a wooded backdrop in views from other directions, below which the height of the onshore substation and National Grid substation will be contained and in so doing, contribute to the mitigation of landscape and visual effects.	n/a
Onshore substation building height	Commitment to external harmonic filters and therefore a significant reduction in building height of the onshore substation from 21m to 15m.	n/a
Lighting	The onshore substation has been designed so that it does not require to be permanently lit at night, with passive lighting (passive infra-red). Task and vehicle lighting used in the hours of darkness during approved working hours.	n/a

29.3.4 Landscape Mitigation

29.3.4.1 Onshore Substation and National Grid Infrastructure

27. The onshore substation location and National Grid substation benefits from some substantial existing hedgerows and woodland blocks within the local area, in particular Grove Wood and Laurel Covert. The woodland at Grove Wood/Laurel Covert will provide substantial screening of the area north of Grove Wood, particularly in views from the east (Knodishall area), north (Knodishall Hall/Saxmundham Road) and south (Snape Road/public right of way (PRoW) between Knodishall and Friston). The extent and height of this mature woodland at Grove Wood/Laurel Covert would provide mitigation of landscape and visual effects from the outset, together with other policy woodlands around Friston House and shelterbelts at Long Covert and those associated with individual farmsteads. Some substantial hedgerow field boundaries and hedgerow trees provide further screening, all of which could contribute to reducing prominence of the onshore substation and National Grid substation from local receptors.

28. There are notable opportunities for deliverable and effective mitigation of the landscape and visual impacts of the onshore substation in the form of new woodland planting. The extent of mitigation planting incorporated into the design is presented on ***Figure 29.11*** and mostly comprises indigenous woodland species planted around the onshore substation and National Grid substation. The landscape mitigation plan proposes four types of woodland planting, as shown in ***Figure 29.11***, consisting of a core native woodland, native woodland edge, native wet woodland mix and screen native woodland mix. These types of woodland planting are summarised as follows:

- Core native woodland – consisting of oak, birch, lime, alder, maple, sycamore, aspen and cherry, planted within the central part of woodland planting areas, forming core woodland. Mix of native species, typical to the area and is intended to provide long-term screening as well as providing habitat and biodiversity.
- Screen native woodland mix – consisting of quicker growing species and evergreens to provide screening, including scots pine, larch, birch and aspen. These are generally faster growing species and the intention is for this mix to provide earlier visual screening and also to act as a “nursery crop” for the core woodland species.
- Native woodland edge mix – consisting of smaller native trees and shrubs, such as hawthorn, elder, hazel, dogwood and blackthorn to form graduated edges around woodland planted areas.
- Native wet woodland mix – small area of wet woodland around the SuDS, planted in soils likely to be in wetter ground, including alder, willow and birch. The tree species chosen are able to withstand wetter ground conditions.

- Native hedgerows – areas of mixed native hedgerow planting.

29. The appearance of the onshore substation and National Grid infrastructure will be influenced by the establishment and growth of these areas of woodland planting over time. Recently planted cell-grown trees and hedgerows are likely to have limited screening effect when not fully established. In the early years of growth, young trees will be establishing, and are assumed to have good vigour, but likely to have limited screening effects in the landscape. Woodland planted areas are assumed to be well established between 5 to 10 years post-planting, with young trees growing in height, having increasing landscape significance and providing some screening of the onshore substations. Between 10 to 15 years post-planting, fully established trees are assumed to be generally retaining good vigour and starting to achieve good height with tree crowns spreading and are expected to provide significant screening of the substations. Taking a precautionary approach, at 15 years post-planting, areas of core woodland and wet woodland are assumed to have a height of between 6m - 10m; area of screening woodland 6m – 12m; and area of edge woodland 2m - 5m; and are shown at these height ranges in the Year 15 photomontages in ***Figures 29.13 – 29.25.***

30. In locations where it is possible to achieve advanced planting this would be implemented at the start of the construction phase. This would mean these areas would already have had approximately three years of growth prior to completion of construction and commencement of operation.

31. Mitigation measures will be described in more detail in the OLEMS (to be prepared as part of the DCO application), with regard to the re-establishment of hedgerows and planting of mitigation landscaping. Mitigation measures will be designed in detail post-consent as part of the discharge of DCO requirements.

32. The mitigation measures have taken into account the 'Statements of Environmental Opportunity' (SEO's) as set out in Natural England's 'National Character Area Profiles'. As the two largest scale components of the proposed East Anglia ONE North project (the onshore substation and the National Grid substation) are located in the Suffolk Coast and Heaths National Character Area (NCA) (82) near the boundary of the South Norfolk and High Suffolk Claylands NCA (83) (***Figure 29.2***). The SEOs for these NCA are, therefore, of particular relevance to the mitigation planting and are summarised below.

33. Suffolk Coast and Heaths NCA (82) *'SEO 2: Manage the components of characteristic productive agricultural landscapes to benefit food production, biodiversity and soil and water quality'.*

34. *'SEO 3: Sustainably manage the agricultural, semi-natural, geological and rich archaeological and historic environment, as well as seeking opportunities for more integrated access to support recreation and education, while protecting the area's wildlife habitats and tranquillity'.*

35. *'Additional opportunity 1. Encourage measures which lead to the enhancement of existing settlements and the design and location of new developments and infrastructure. Provide wider associated social and cultural benefits through the provision and management of high-quality green infrastructure networks'.*

36. High Suffolk Claylands NCA (83) *'SEO 1: Maintain and enhance the rural character of the landscape and the contrast between the arable plateau and pastoral river valleys by maintaining agricultural productivity and encouraging sustainable land management practices that protect and enhance the landscape, geodiversity and biodiversity assets while benefiting water quality and water availability, as well as the rural sense of place and tranquillity.'*

37. *'SEO 4: Protect and enhance the area's ancient semi-natural woodlands, copses, river valley plantations and ancient boundaries including hedgerows and hedgerow trees, through the management of existing and the creation of new woods and hedgerows to benefit biodiversity, landscape character and habitat connectivity, and for the benefits to soil erosion reduction, water infiltration and quality, timber provision and carbon storage.'*

38. The mitigation plans respond to these objectives through their inclusion of substantial areas of new woodland, species rich grassland and hedgerows, the arrangement of these areas to connect internally on site and connect externally with existing woodlands, grasslands and hedgerows in the surrounding landscape, and the contribution they would make through their design to the enhancement of the local landscape character.

39. Land in proximity to the onshore substation and National Grid substation is relatively flat and gently undulating, however the landform to the north rises gradually and provides visual containment. Owing to the dimensions of the onshore substation and National Grid substation and the associated construction consolidation areas, construction activities would be required to level existing contours.

40. Adverse landscape and visual effects can be mitigated over the longer term with the implementation of the landscape mitigation plan for the site, which offers potential to connect existing mature woodland blocks with further woodland planting, strengthening the existing hedgerow network, changes in hedgerow management to retain higher hedgerows, and off-site planting near to specific receptors. It is considered that full or effective landscape mitigation could be

secured and is capable of being delivered and effective over the long-term (10-15 year post planting) as part of the OLEMS.

29.3.4.2 Onshore Cable Route and Landfall Location

41. The onshore cable route will be designed to follow a route that avoids and minimises the felling of hedgerows, stands of woodlands/shelterbelts and patches of heathland vegetation, as far as possible. There are however, locations along the cable route where the onshore cable route construction will breach existing hedgerows, resulting in felling of some sections of hedgerow. Where possible, replacement hedgerow and tree planting will be undertaken at the end of the construction stage to reinstate hedgerows and trees within the onshore cable route.

42. Where sections of hedgerow are to be felled, replacement planting will be undertaken along the original hedgerow field boundary line, using a bespoke hedgerow planting mix that is appropriate to each location. Bespoke hedgerow and tree replanting locations will be identified in the cable landscape mitigation plan and planting mixes specified in the planting schedule as part of the OLEMS. The bespoke hedgerow replanting will include a range of hedgerow species, with the planting mix tailored to each location according to the existing hedgerow species present, the character of the hedgerow.

43. Hedgerow replacement planting over the cable trenches is acceptable as hedgerow roots are typically 800mm deep and the cables a typical 1.25m depth to the top of the cables. High impact, polyethylene polymer cable protection covers will also be laid within the cable trench and will also afford protection against hedgerow roots.

29.3.5 Monitoring

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

29.4 Assessment Methodology

29.4.1 Guidance

45. There are a number of pieces of legislation, policy and guidance applicable to LVIA. The following sections provide detail on key pieces of international and UK legislation, policy and guidance which are relevant to this chapter.

29.4.1.1 Legislation and Policy

29.4.1.1.1 European Landscape Convention (ELC)

46. The ELC is devoted exclusively to the protection, management and planning of all landscapes in Europe. Landscape is described as *"an area, as perceived by people, whose character is the result of the action and interaction of natural and/ or human factors"* (ELC 2000). The definition applies to all urban and peri-urban landscapes, towns, villages, rural areas, the coast and inland areas. In addition, it applies to ordinary or even degraded landscape as well as those areas that are of outstanding value or protected.

47. The ELC is binding in the UK. As a signatory, the UK Government has therefore undertaken to adopt general policies and measures to protect, manage and plan landscapes as follows:

- To recognise landscapes in law as an essential component of people's surroundings, an expression of the diversity of their shared cultural and natural heritage, and a foundation of their identity;
- To establish and implement landscape policies aimed at landscape protection, management and planning through the adoption of the specific measures. These include awareness-raising, training and education, identification and assessment of landscapes, definition of landscape quality objectives and the implementation of landscape policies;
- To establish procedures for the participation of the general public, local and regional authorities, and other parties with an interest in the definition and implementation of the landscape policies mentioned above; and
- To integrate landscape into regional and town planning policies and in cultural, environmental, agricultural, social and economic policies, as well as in any other policies with possible direct or indirect impact on landscape.

48. Landscape policy in the UK is already closely aligned with the Convention, and before UK ratification a Regulatory Impact Assessment had demonstrated that existing procedures and practice (through the work over many years of Government agencies, Local Government and Non-Governmental Organisations (NGOs) such as the National Trust) are compliant with its formal requirements.

Given the UK's adoption of the ELC and its aims, the ELC gives an appropriate basis for the importance placed on the UK landscape.

29.4.1.1.2 National Policy Statements

49. The assessment of potential effects on the landscape and visual receptors has been made with reference to relevant NPSs, as discussed in ***Chapter 3 Policy and Legislative Context***. The relevant NPSs to this assessment are:

- Overarching National Policy Statement for Energy (NPS EN-1 July 2011);
- National Policy Statement for Renewable Energy Infrastructure (NPS EN-3 July 2011); and
- National Policy Statement for Electricity Networks Infrastructure (NPS EN-5 July 2011).

50. The specific assessment requirements for landscape and visual receptors, as detailed in the NPSs, are summarised in ***Table 29.5.***

Table 29.5 NPS Assessment Requirements

NPS Requirement	NPS Reference	PEIR Reference
EN-1 Overarching NPS for Energy		
Paragraph 5.9.5 of EN-1 advises that the applicant should carry out a landscape and visual assessment and makes reference to the following documents: Landscape Institute and Institute of Environmental Management and Assessment (2002, 2nd edition): Guidelines for Landscape and Visual Impact Assessment; and Land Use Consultants (2002): Landscape Character Assessment – Guidance for England and Scotland.	Paragraph 5.9.5	'The Guidelines for Landscape and Visual Impact Assessment' (GLVIA) (2002, 2nd edition) has been superseded by GLVIA Version 3. Landscape Character Assessment – Guidance for England and Scotland has been superseded by Natural England's 'An Approach to Landscape Character Assessment'. This LVIA has been prepared following the updated versions of these documents which are referred to in ***Appendix 29.1***.
"The landscape and visual assessment should include reference to any landscape character assessment and associated studies as a means of assessing landscape impacts relevant to the proposed project. The applicant's assessment should also take account	Paragraph 5.9.5	Published character assessments for the study area and policies are referred to in ***section 29.5*** of the LVIA.

NPS Requirement	NPS Reference	PEIR Reference
of any relevant policies based on these assessments in local development documents in England."		
"The applicant's assessment should include the effects during construction of the project and the effects of the completed development and its operation on landscape components and landscape character."	Paragraph 5.9.5	The effect on landscape components and landscape character during construction and operation are assessed in ***section 29.6*** of the LVIA and ***Appendix 29.2***.
"The assessment should include the visibility and conspicuousness of the project during construction and of the presence and operation of the project and potential impacts on views and visual amenity."	Paragraph 5.9.7	The visual effect of the proposed East Anglia ONE North project during construction and operation are assessed in ***section 29.6*** of the LVIA and ***Appendix 29.3***.
"Landscape effects depend on the existing character of the local landscape, its current quality, how highly it is valued and its capacity to accommodate change. All of these factors need to be considered in judging the impact of a project on landscape. Virtually all nationally significant energy infrastructure projects will have effects on the landscape. Projects need to be designed carefully, taking account of the potential impact on the landscape. Having regard to siting, operational and other relevant constraints the aim should be to minimise harm to the landscape, providing reasonable mitigation where possible and appropriate."	Paragraph 5.9.8	The quality, value and capacity of the landscape to accommodate change are considerations of the landscape assessment. The design of the proposed East Anglia ONE North project has considered the potential impact on the landscape in order to minimise harm by mitigation of landscape effects as presented in ***section 29.6*** and ***Appendix 29.2***.
"The duty to have regard to the purposes of nationally designated areas also applies when considering applications for projects outside the boundaries of these areas which may have impacts within them. The aim should be to avoid compromising the purposes of designation and such projects should be designed sensitively given the various siting, operational, and other relevant constraints.' … and paragraph 5.9.13 advises 'The fact that a proposed project will be visible from within a designated area should not in itself be a reason for refusing consent."	Paragraph 5.9.12 and 5.9.13	The potential for the proposed East Anglia ONE North project to affect the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB), The Broads National Park (NP) and Registered Parks and Gardens (RPG), has been considered in ***section 29.6*** of the LVIA and ***Appendix 29.2***.
"Outside nationally designated areas, there are local landscapes that may be highly valued locally and protected by local designation. Where a local	Paragraph 5.9.14	The value of the local landscape is a consideration within the

NPS Requirement	NPS Reference	PEIR Reference
development document in England has policies based on landscape character assessment, these should be paid particular attention. However, local landscape designations should not be used in themselves to refuse consent, as this may unduly restrict acceptable development."		LVIA and assessed in respect of each landscape receptor in ***section 29.6*** and ***Appendix 29.2***.
In reaching a judgement "*The IPC [now the Planning Inspectorate and the Secretary of State] should consider whether the project has been designed carefully, taking account of environmental effects on the landscape and siting, operational and other relevant constraints, to minimise harm to the landscape, including by reasonable mitigation."*	Paragraph 5.9.17	***Chapter 4 Site Selection and Assessment of Alternatives*** of the PEIR sets out the iterative process that has influenced the design of the proposed East Anglia ONE North project. The mitigation of landscape and visual effects has been carefully considered in the LVIA, to minimise 'harm to the landscape' where possible.
"It may be helpful for applicants to draw attention, in the supporting evidence to their applications, to any examples of existing permitted infrastructure they are aware of with a similar magnitude of impact on sensitive receptors. This may assist the IPC in judging the weight it should give to the assessed visual impacts of the proposed development."	Paragraph 5.9.19	East Anglia ONE and East Anglia THREE are examples of existing permitted onshore infrastructure which may have comparable landscape and visual impacts.
"Within a defined site, adverse landscape and visual effects may be minimised through appropriate siting of infrastructure within that site, design including colours and materials, and landscaping schemes, depending on the size and type of the proposed project. Materials and designs of buildings should always be given careful consideration."	Paragraph 5.9.22	Mitigation through detailed landscape proposals will be a consideration in terms of the mitigation of landscape and visual effects. These are presented in ***section 29.3.4***.
EN-3 NPS for Renewable Energy Infrastructure		
"Proposals for renewable energy infrastructure should demonstrate good design in respect of landscape and visual amenity, and in the design of the project to mitigate impacts such as noise and effects on ecology."	Paragraph 2.4.2	Project design has avoided sensitive features where possible. Embedded mitigation measures are presented in ***section 29.3.3***.
EN-5 NPS for Electricity Networks Infrastructure		
"New substations, sealing end compounds and other above ground installations that form connection, switching and voltage transformation points on the	Paragraph 2.8.2	The potential effects of the onshore substation, National Grid substation

NPS Requirement	NPS Reference	PEIR Reference
electricity networks can also give rise to landscape and visual impacts. Cumulative landscape and visual impacts can arise where new overhead lines are required along with other related developments such as substations, wind farms and/or other new sources of power generation."		and overhead line modification have been assessed in the LVIA in ***section 29.6*** and ***Appendices 29.2 and 29.3***.

29.4.1.2 Assessment Guidance

51. This methodology has been specifically devised by OPEN for the assessment of energy developments and accords with Guidelines for Landscape and Visual Impact Assessment: Third Edition (GLVIA3). The following publications have been used for guidance and reference in preparation of the LVIA:

- The Planning Inspectorate (2018) Advice Note Nine: Rochdale Envelope;
- Landscape Institute and IEMA (2013) - Guidelines for Landscape and Visual Impact Assessment: Third Edition (GLVIA3);
- Landscape Institute (2017). Visual Representation of Development Proposals;
- Natural England (2014). An Approach to Landscape Character Assessment; and
- Scottish Natural heritage (SNH) (2017) - Visual Representation of Wind Farms, Guidance (Version 2.2) (herein referred to as 'SNH Visual Representation').

29.4.2 Data Sources

52. Data has been gathered from official, reliable and the most up-to-date sources. This includes Ordnance Survey map-based data, as well as data on landscape characterisation, landscape designations and other Governmental and local authority data of relevance, including:

- EDF Energy, Suffolk Coast and Heaths AONB Partnership, Suffolk County Council, Suffolk Coastal District Council and Waveney District Council (2016) Suffolk Coast and Heaths AONB - Natural Beauty and Special Qualities Indicators.
- LDA Design (April 2018) Suffolk, South Norfolk and North Essex Preliminary Seascape Character Assessment.
- Ordnance Survey (2017) Terrain 50 DTM; Terrain 5 DTM; 1:50,000 scale colour raster.
- Suffolk Coast & Heaths AONB (2013) Suffolk Coast & Heaths AONB Management Plan 2013 – 2018.

- Suffolk Coast and Heaths AONB (2012) Touching the Tide Landscape Character Assessment.
- Suffolk County Council (2011) Suffolk Landscape Assessment.
- Waveney District Council (2008) Waveney District Landscape Character Assessment.

53. The full list of sources is set out in ***Appendix 29.1***.

54. The desk study also utilises Geographic Information System (GIS) software to explore the potential visibility of the onshore infrastructure associated with the proposed East Anglia ONE North project. The resultant ZTV diagrams provide an indication of which landscape and visual receptors are likely to be key in the assessment.

29.4.3 Impact Assessment Methodology

55. The methodology for the assessment of landscape and visual impacts of the proposed East Anglia ONE North onshore project is set out in full in ***Appendix 29.1***. A brief summary of the LVIA methodology is provided within this chapter as follows. The LVIA provides a project alone assessment of the landscape and visual impact of the proposed East Anglia ONE North onshore infrastructure (and National Grid infrastructure) in ***Appendix 29.2*** (Landscape Assessment) and ***Appendix 29.3*** (Visual Assessment) and are summarised in ***section 29.6*** of this chapter.

56. The cumulative landscape and visual effects of the East Anglia ONE North onshore infrastructure and East Anglia ONE North onshore infrastructure are assessed in ***Appendix 29.4*** and are summarised in ***section 29.7*** of this chapter.

29.4.3.1 Whole Project Impacts

57. The assessments presented in ***Chapter 28 Seascape, Landscape and Visual Impact Assessment*** and ***Chapter 29 Landscape and Visual Impact Assessment*** of the PEIR together provide a whole project assessment of the seascape, landscape and visual effects of the proposed East Anglia ONE North project i.e. of both the offshore development area (including windfarm site, offshore platforms, offshore export cable corridor) and the onshore infrastructure).

58. The effect of the offshore development area on specific offshore receptors (coastal viewpoints, seascape character areas etc) is assessed in ***Chapter 28 Seascape, Landscape and Visual Impact Assessment***. The effect of the onshore infrastructure on specific onshore receptors (inland viewpoints, landscape character areas etc) is assessed in ***Chapter 29 Landscape and***

Visual Impact Assessment. ***Chapter 28 Seascape, Landscape and Visual Impact Assessment*** refers primarily to effects of the offshore development area, while ***Chapter 29 Landscape and Visual Impact Assessment*** refers primarily to effects of the onshore infrastructure and should be read together as the de-facto whole project assessment of the proposed East Anglia ONE North project. A further assessment of inter-related impacts in ***section 28.11*** of ***Chapter 28 Seascape, Landscape and Visual Impact Assessment*** assesses any areas where the offshore development area and onshore infrastructure combine, or inter-relate, to have an impact e.g. on views from the coastal area near the landfall (between Sizewell and Thorpeness) and the combined effects of the offshore development area and onshore infrastructure on the character of the Suffolk Coast and Heaths AONB.

29.4.3.2 Overview of Approach to LVIA

59. The LVIA deals with the effects of changes resulting from the proposed East Anglia ONE North project on landscape as a resource, the views available to people and their visual amenity. The LVIA is undertaken using the following steps:

- The features of the onshore infrastructure associated with the proposed East Anglia ONE North project that may result in landscape and visual effects are described;
- The overall scope of the assessment is defined, including the LVIA study area and range of possible landscape and visual effects, through the scoping report/process and through stakeholder consultation meetings with the LVIA ETG;
- The landscape baseline is established using landscape character assessment and the ZTV of the onshore infrastructure associated with the proposed East Anglia ONE North project, to identify landscape receptors that may be affected and their key characteristics and values;
- The main LVIA in ***Appendix 29.2*** and ***Appendix 29.3*** considers effects of the proposed East Anglia ONE North onshore infrastructure with a baseline that includes the Sizewell nuclear power stations and the Greater Gabbard and Galloper substation;
- The visual baseline is established by identifying the extent of possible visibility (ZTV), identifying the people who may be affected and identifying visual receptors and selecting viewpoints;
- A preliminary assessment is undertaken of landscape and visual receptors using site study, desk based study and ZTV analysis, to identify which landscape and visual receptors are and are not, likely to be significantly

affected by the onshore infrastructure of the proposed East Anglia ONE North project, and therefore require to be assessed in full;

- Interactions are identified between the onshore infrastructure associated with the proposed East Anglia ONE North project and landscape and visual receptors, to predict potentially significant effects arising and propose measures to mitigate effects;
- An assessment of the susceptibility of landscape and visual receptors to specific change and the value attached to landscape receptors and views is undertaken, **these judgements are combined to assess the sensitivity of the landscape and visual receptors** to the onshore infrastructure of the proposed East Anglia ONE North project;
- An assessment of the size and scale of landscape effect, the degree to which landscape elements are altered and the extent to which the effects change the key characteristics of the landscape is undertaken, combining these judgements to assess the magnitude of change on the landscape receptor;
- An assessment is undertaken of the size and scale of visual effect, the extent to which the change would affect views, whether this is unique or representative of a wider area, and the position of the onshore infrastructure associated with the proposed East Anglia ONE North project in relation to the principal orientation of the view and activity of the receptor. **These judgements are combined to assess the magnitude of change on the visual receptor**; and
- The assessments of sensitivity to change and magnitude of change is combined to assess the significance of landscape and visual effects.

60. The magnitude of change is then assessed with mitigation (at 15 years post planting) as presented in ***section 29.3.4*** which results in the assessment of residual impact significance.

29.4.3.3 Defining Impact Significance

61. The objective of the assessment is to predict the likely significant effects of the proposed East Anglia ONE North project on the landscape and visual resource. In accordance with the EIA Regulations, landscape and visual effects are assessed to be either significant or not significant. The LVIA does not define intermediate levels of significance as the EIA Regulations do not provide for these.

62. The significance of the effect on each landscape character receptor is dependent on all of the factors considered in the **sensitivity of the receptor** and the **magnitude of change** resulting from the proposed East Anglia ONE North

onshore infrastructure. Factors which influence levels of sensitivity and magnitude of change assessed in the LVIA are set out in full in ***Appendix 29.1***.

63. Judgements on sensitivity and magnitude of change are combined to arrive at an overall assessment as to whether the proposed East Anglia ONE North project would have an effect that is significant or not significant on each landscape and visual receptor. An assessment of the factors considered in the evaluation of the sensitivity of each landscape and visual receptor and the magnitude of the change resulting from the proposed East Anglia ONE North project is presented, in order that the relevant considerations which have informed the significance can be considered transparently.

64. The matrix in ***Table 29.6*** helps to inform the threshold of significance when combining sensitivity and magnitude to assess significance.

Table 29.6 Impact Significance Matrix

		Magnitude of change					
		High	**Medium-high**	**Medium**	**Medium-low**	**Low**	**Negligible**
Sensitivity	**High**	*Significant*	*Significant*	*Significant*	*Significant or not significant*	*Not significant*	*Not significant*
	Medium-high	*Significant*	*Significant*	*Significant or not significant*	*Significant or not significant*	*Not significant*	*Not significant*
	Medium	*Significant*	*Significant or not significant*	*Significant or not significant*	*Not significant*	*Not significant*	*Not significant*
	Medium-low	*Significant or not significant*	*Significant or not significant*	*Not significant*	*Not significant*	*Not significant*	*Not significant*
	Low	*Significant or not significant*	*Not significant*	*Not significant*	*Not significant*	*Not significant*	*Not significant*

29.4.3.4 Geographical Extent

65. The geographic extent over which the landscape and visual effects would be experienced is also assessed, which is distinct from the size or scale of effect. This evaluation is not combined in the assessment of the level of magnitude, but instead expresses the extent of the receptor that would experience a particular magnitude of change and therefore the geographical extents of the significant and non-significant effects.

66. The extent of the effects varies depending on the specific nature of the onshore infrastructure and is principally assessed through analysis of the extent of perceived changes through visibility of the onshore infrastructure.

29.4.3.5 Duration and Reversibility

67. The duration and reversibility of landscape and visual effects is based on the period over which the onshore substation, onshore cable route and landfall of the proposed East Anglia ONE North project are likely to exist and the extent to which they would be removed, and their effects reversed at the end of that period. Duration and reversibility are not incorporated into the overall magnitude of change and are stated separately in relation to the assessed effects. Long-term, medium-term and short-term landscape and visual effects are defined as follows:

- Long-term – more than 10 years.
- Medium-term – 5 to 10 years.
- Short-term – 1 to 4 years.

68. Landscape and visual effects are assessed as either permanent or temporary. Permanent effects are those which are irreversible, such as the permanent or long-term (>10 years) land take as a result of development or the physical removal of existing landscape elements that cannot be reinstated. Temporary effects are those which are reversible, such as the short to medium-term (<10 years) effects, occurring during construction, or where the physical removal of landscape elements can be reinstated, or a temporary visual effect that occurs over the short to long-term, until it is ultimately mitigated by the growth/height of new woodland planting.

69. OPEN's methodology does not include duration and reversibility as part of magnitude of change, as there is potential that the reversibility aspect could alter or reduce potentially significant effects even though they are long-term. The duration and reversibility of the effects is instead determined separately and recorded alongside significance rather than being a factor of it.

29.4.4 Cumulative Impact Assessment

70. In accordance with guidance (SNH 2012), the cumulative LVIA undertaken in this PEIR assesses the combined landscape and visual effect of a set of developments taken together.

71. The cumulative LVIA in ***Appendix 29.4*** and summarised in this chapter considers the effects of the proposed East Anglia ONE North onshore infrastructure cumulatively with the proposed East Anglia TWO onshore infrastructure. The cumulative effects assessment focuses on the combined (or total) effect of the

proposed East Anglia ONE North and East Anglia TWO onshore infrastructure since the applications for both projects are being submitted at the same time and it is the combined effect of both projects that is likely to be of interest to stakeholders (rather than the additional/incremental effect of the proposed East Anglia ONE North project being assessed, on top of a baseline with the other project).

72. Construction stage cumulative impact assessment scenarios of the East Anglia ONE North onshore infrastructure and East Anglia TWO onshore infrastructure are assessed in ***Appendix 29.4*** and summarised in ***section 29.7*** of this chapter in two scenarios:

- Scenario 1 – East Anglia ONE North and East Anglia TWO onshore infrastructure are constructed at the same time.
- Scenario 2 – East Anglia ONE North onshore infrastructure is built entirely and the land re-instated, then East Anglia TWO onshore infrastructure is constructed.

73. A further cumulative scenario is then assessed in ***Appendix 29.4*** and summarised in ***section 29.7*** of this chapter – the effects of the proposed East Anglia ONE North and East Anglia TWO onshore infrastructure with Sizewell C, EDF Energy's proposals for a new nuclear power station.

74. The operational phase cumulative landscape and visual impact will be the same irrespective of the construction scenario and assesses the impact of the operation of the proposed East Anglia ONE North substation, proposed East Anglia TWO substation and National Grid substation.

29.4.5 Transboundary Impact Assessment

75. Transboundary effects have been scoped out of the LVIA since there is no potential for transboundary landscape and visual effects to arise as a result of the onshore infrastructure of the proposed East Anglia ONE North project.

29.4.6 Visual Representations

76. The methodology for the production of visual representations (photomontages and Zone of Theoretical Visibility (ZTVs)) of the proposed East Anglia ONE North proposed onshore development area is set out in full in ***Appendix 29.1***.

77. Photomontages have been produced in accordance with SNH Visual Representation of Windfarms Guidance (SNH February 2017) and the Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA 3) (Landscape Institute and IEMA 2013).

78. The worst case 3D model representations are discussed in ***section 29.3.2***.

79. The photomontages provide a visual representation of the proposed woodland mitigation planting shown in the landscape mitigation plan (***Figure 29.11***) at approximately 15 years post planting with fully established trees, with heights of between 2m – 12m across the woodland edge/core/screening mixes identified in ***section 29.3.4***, coming into maturity and providing screening of the onshore substation and National Grid substation.

29.5 Existing Environment

80. An understanding of the existing environment, combined with an overview of the sensitivities of receptors to the proposed East Anglia ONE North project, act to identify those receptors that are susceptible to being significantly affected and, this has assisted in defining the scope of the LVIA as set out in the Preliminary Assessments (***Appendix 29.2*** and ***Appendix 29.3)***. For those landscape and visual receptors, identified in the Preliminary Assessment to have the potential to undergo significant effects, a detailed baseline description for each receptor is presented in the Technical Assessments (***Appendix 29.2*** and ***Appendix 29.3)***.

81. The detailed baseline descriptions provide an understanding of the landscape in the area that may be affected – its constituent elements, its character, distinctiveness, condition and value, and the way this varies spatially. The key characteristics and value of each relevant receptor is set out, covering key features and patterns of the landform, land-cover and land-use that make the landscape or views of these areas distinctive.

82. The baseline also describes current pressures that may cause change in the landscape in the future, in particular drawing on information for developments that are not yet present in the landscape but are at other stages in the consenting process. Operational and under construction developments will be regarded as part of the baseline landscape character of the area. Any changes resulting from the onshore infrastructure of the proposed East Anglia ONE North project are assessed with consideration of this context.

83. This section presents an overview of the landscape elements, landscape character types, landscape designations and visual receptors that make up the LVIA study area, in order to 'set the scene' for the assessment. Desk-based studies have been supplemented with on-site observations to verify the documented landscape and visual receptor descriptions and boundaries.

29.5.1 Landscape Elements

84. Landscape elements are the physical components which make up the site, for example the agricultural land, heathland or woodland that covers the site, as well

as other features such as hedgerows, shelter belts or watercourses. The assessment considers the direct impacts on the landscape elements of the site as a result of the onshore infrastructure, such as the removal of trees or alteration to ground cover.

85. As the site covers an elongated area from the landfall, along the onshore cable route to the onshore substation and National Grid infrastructure, a variety of landscape elements would be affected, in particular, during the construction phase. The careful routeing of the onshore cable route ensures that the majority of the route will pass through agricultural land. As this land has been modified through cultivation for many centuries, it is not as sensitive to the construction impacts of the onshore cable route as land that remains natural or semi-natural, such as the heathlands nearer the coast. The routeing also avoids where possible the sensitive landscape elements of woodland, hedgerows, shelter-belts and watercourses.

86. The potential effects on the landscape character of the main landscape elements, resulting from the onshore infrastructure, are assessed in ***Appendix 29.2***, with the findings summarised in ***section 29.6*** of this chapter.

29.5.2 Landscape Character

87. Effects on landscape character arise either through the introduction of new elements that physically alter the pattern of elements that makes up landscape character, or through visibility of the proposed East Anglia ONE North project, which may alter the way in which the pattern of elements is perceived. Landscape character principally applies to terrestrial areas lying to the landward side of the high-water mark. There is a hierarchy of published Landscape Character Assessments (LCAs) that describe the baseline landscape character of the landscape in the LVIA study area, at the national, county and district level.

88. The English landscape is classified at the national level by 159 National Character Areas (NCAs) originally identified by the Countryside Agency. This mapping and the associated descriptions have been revised and developed by Natural England into NCA profiles, which provide a recognised, national, spatial framework. The eastern part of the LVIA study area is located within the Suffolk Coast and Heaths NCA (82) and the western part is located in the South Norfolk and High Suffolk Claylands NCA (83) as shown on ***Figure 29.2***.

89. The Suffolk Coast and Heaths NCA (82) is located on the North Sea coast, forming a long, narrow band of coast, heath and farmland landscape that extends inland from the coast. The shingle beaches and cliffs of the coast and the lowland heaths form distinctive features, although traditional heath is now highly fragmented. Farming now utilises much of the total land area. Sizewell A and B

Nuclear Power Stations are located on the coast within the NCA, immediately to the north of the onshore cable route. The contrast is distinctive between these landscapes shaped by people for farming and energy generation, with areas of coast, heathland and plantation woodland that are valued highly for their ecology and wildlife.

90. The Norfolk and High Suffolk Claylands (83) is located to the west and adjacent to the inland edge the Suffolk Coast and Heaths NCA (82), covering the western part of the LVIA study area to the west of Leiston. Above all, this is a farming landscape, with a strong utilitarian and rural character, evoked in its irregular field patterns. It is a long-settled landscape, with nucleated villages intermixed with dispersed hamlets and farmsteads. Large areas of woodland are relatively scarce, but the extent of scattered smaller woodlands, hedges and hedgerow trees are still notable elements in the landscape, often confining views.

91. Landscape Character Types (LCTs) defined in the Suffolk County Council Landscape Character Assessment (Suffolk County Council, 2008/2011) define the baseline for the LVIA study area, as shown on ***Figure 29.2***. The LVIA study area is comprised of a number of LCTs, as shown in ***Figure 29.2***, but the onshore infrastructure is located within four LCTs:

- Ancient Estate Claylands – onshore substation and National Grid substation;
- Coastal Dunes and Single Ridges – landfall;
- Coastal Levels – onshore cable route crossing of the Hundred River Valley; and
- Estate Sandlands – landfall, onshore cable route and partially the National Grid substation.

92. The Ancient Estate Claylands LCT covers the eastern part of the LVIA study area where part of the onshore cable route, the onshore substation and National Grid substation would be located. The LCT comprises a broad and generally flat plateau landscape. The rivers draining east and south through this part of the Suffolk landscape, have dissected the edge of the claylands plateau into a series of ‘fingers’. The Ancient Estate Claylands LCT is mostly used as farmland with medium to large fields enclosed by hedgerows, hedgetrees and trees, with also intermittent blocks of woodland. While the plateau landform ensures some longer and more open views occur, a much more intimate character is created by the enclosed nature of much of this landscape. Small villages and town occur across this landscape.

93. The Coastal Dunes and Shingle Ridges LCT occurs as a narrow band along the coastal edge of the LVIA study area. The LCT is characterised by flat or gently

rolling shingle ridges and coastal dunes, formed through coastal erosion and longshore drift. There is little vegetation and the coastal landscape is open, with expansive views seaward and also often landward. Sea defence structures on the shingle beaches and military defence structures in the sand dunes, stand out as apparent interventions in this otherwise, simple and natural landscape.

94. The Coastal Levels LCT occurs in one small area in the south of the LVIA study area, associated with Hundred River. While this LCT is principally characterised by the flat and low-lying, marshland associated with the coast and estuaries, the area that occurs in the LVIA study area has mostly been reclaimed for farming. The fields are small and geometric with drainage ditches and occasional dykes and used mostly for grazing livestock. Woodland and settlement occur along the edge of the Hundred River making views typically enclosed.

95. The Estate Sandlands LCT covers most of the LVIA study area, extending from the east to the west. This LCT covers much of the coastal area and is characterised by flat or gently undulating plateaux. The natural vegetation of this LCT is heathland or acid grassland, suited to the freely-draining sandy soils and the general absence of watercourses. The use of irrigation gradually enabled this landscape to be converted into arable farmland, with also widespread wooded shelter-belts and plantations. While settlement is generally sparse, Sizewell Nuclear Power Station forms a distinctive industrial feature.

96. More detailed baseline descriptions of these four LCTs are presented in the Technical Assessments contained in ***Appendix 29.2,*** along with the assessment of potential effects on the landscape character, resulting from the onshore infrastructure. The findings are summarised in ***section 29.6*** of this chapter.

29.5.3 Landscape Designations

97. There are three landscape designations which are of relevance to the LVIA and which all lie partly within the LVIA study area, as shown on ***Figure 29.3***.

- Suffolk Coast and Heaths AONB;
- Suffolk Heritage Coast; and
- Hundred River Valley Special Landscape Area (SLA).

29.5.3.1 Suffolk Coast and Heath AONB

98. The eastern part of the LVIA study area is located within the nationally designated Suffolk Coast and Heaths AONB, as shown on ***Figure 29.3***. The AONB largely covers the Suffolk Coast and Heaths NCA (82) between Lowestoft and Felixstowe, but within the LVIA study area covers land along the River Alde and the coast between Aldeburgh, Thorpeness, Sizewell and Dunwich.

99. The unique character of the AONB is a product of its underlying geology, shaped by the effects of the sea and the interaction of people with the landscape. It is a mainly flat or gently rolling landscape, often open but with few commanding viewpoints. In many places, and especially near the coast, habitats and landscape features lie in an intimate mosaic, providing great diversity in a small area.

100. The AONB comprises mainly farmland. Other main components of the landscape are forestry plantations, low-lying freshwater marshes, intertidal estuaries, heathland, the coast, small villages and iconic coastal market towns. The area is probably best known for the particularly distinctive features of the coast and lowland heath which give the AONB its name. Where it joins the sea, the AONB consists of predominantly shingle beaches, often extensive in nature, and backed in places by sandy cliffs. The coastline is interrupted by five river estuaries (Blyth, Alde/Ore, Deben, Orwell and Stour) with extensive wildlife-rich intertidal areas of mudflat and saltmarsh. In some places, old estuary mouths have become blocked, creating large areas of brackish or freshwater marshland of significant wildlife value. Centuries old river walls were created to reclaim intertidal areas from the estuaries. These areas claimed from the sea are now important for agriculture.

101. The area's heathland, known locally as the Sandlings and now much fragmented, follows the line of the coast. Large areas that were once Sandlings heath have been converted to farmland, planted as coniferous forests or developed for housing or military airfields, particularly during the 20th century. The Suffolk Coast and Heaths AONB remains a lightly populated, undeveloped area, popular for outdoor recreation and tourism. The area is valued for its tranquillity, the quality of the environment and culture and for its wildlife.

102. The main LCTs that make up the Suffolk Coast and Heaths AONB are:

- Coastal Dunes and Shingle Ridges (LCT 05);
- Coastal Levels (LCT 06);
- Open Coastal (LCT 08) and Wooded Fens (LCT 29);
- Estate Sandlands (LCT 07);
- Estate Farmlands (LCT 11 and 15);
- Rolling Estate Sandlands (LCT 16);
- Saltmarsh and Intertidal Flats (LCT 20); and
- Valley Meadowlands (LCT 26).

103. A landscape baseline of the Suffolk Coast and Heaths AONB is described in full in ***Appendix 29.2***, referring to these LCTs from the Suffolk Landscape Assessment, the AONB Management Plan and the AONB Special Qualities report (EDF Energy, Suffolk Coast and Heaths AONB Partnership, Suffolk County Council, Suffolk Coastal District Council and Waveney District Council, 2016). A full baseline description of the AONB, its special qualities and the potential effects from the onshore infrastructure, are assessed in the Technical Assessment of ***Appendix 29.2***, with the findings summarised in ***section 29.6*** of this chapter.

104. For the purpose of the assessment presented in ***section 29.6,*** the AONB has been divided into three 'Areas' in order to demonstrate the difference in effects that may occur at different locations within the AONB. These 'Areas' are shown on ***Figure 29.8*** and are as follows:

- Area A – AONB between Thorpeness, Sizewell and Leiston;
- Area B – AONB between Thorpeness, Aldeburgh and Snape; and
- Area C – AONB between Sizewell and Dunwich Forest.

29.5.3.2 Suffolk Heritage Coast

105. The Suffolk Heritage Coast is located within the LVIA study area and is largely contained within the AONB. The Technical Assessment in ***Appendix 29.2*** describes and assesses the effects of the onshore infrastructure of the proposed East Anglia ONE North project on the special characteristics and qualities of the Heritage Coast as part of the assessment of the AONB.

106. The Suffolk Heritage Coast is located within the LVIA study area, as shown on ***Figure 29.3***. The Suffolk Heritage Coast was defined in 1973 and is largely contained within the AONB. It runs from Kessingland to Felixstowe and incorporates the Blyth, Alde/Ore and lower Deben estuaries. There are no statutory requirements or powers associated with the Heritage Coast definition, however it is noted that it includes objectives for conserving the environmental health and biodiversity of inshore waters and beaches, and to extend opportunities for recreational, educational, sporting and tourist activities that draw on, and are consistent with, the conservation of their natural beauty and the protection of their heritage features. The purpose of Heritage Coast is similar to that of an AONB. As its geographic area is largely within the AONB and its protection policies are now incorporated into the AONB Management Plan, the effects on the Suffolk Heritage Coast designation are considered as integral to this assessment of the AONB.

29.5.3.3 Hundred River Valley SLA

107. Special Landscape Areas (SLAs) are a county wide designation under "saved" policy AP13 of the Suffolk Coastal District Plan, which provides policy protection to areas within Suffolk with special landscape attributes which are particularly vulnerable to change. They include some river valleys which still have traditional grazing meadows and marshes with their hedgerows, dykes and associated flora and fauna and Historic Parklands. The valleys of the Rivers Alde, Blyth, Deben, Fynn, Hundred, Mill, Minsmere, Ore and Yox together with their tributaries have been identified as SLAs. All of these are located outside the onshore LVIA study area, with the exception of the Hundred River Valley SLA, which is located along the Hundred River through Aldringham, as shown in ***Figure 29.3***.

108. A baseline description of the Hundred River Valley SLA and the potential effects resulting from the onshore infrastructure, are assessed in the Technical Assessment of ***Appendix 29.2***, with the findings summarised in ***section 29.6*** of this chapter.

29.5.4 Visual Receptors and Views

29.5.4.1 Zone of Theoretical Visibility

109. Visual effects occur where the onshore infrastructure change or influence the visual amenity and views experienced by people in the LVIA study area. ZTVs of the onshore substation and National Grid infrastructure are shown on ***Figure 29.7*** to ***29.9***. The ZTVs show the main areas in which the onshore substation and National Grid infrastructure would theoretically be visible. The ZTVs help to highlight those visual receptors that may be affected and assist in the identification of viewpoints. Actual visibility is typically more limited in extent owing to further screening effects of hedgerows, tree cover and built form which may not be taken into full account in the production of the ZTV. Field work has been undertaken to verify which viewpoints actual visibility would be experienced from.

110. ZTVs have not been produced for the landfall and onshore cable route owing to the predominantly subterranean or temporary nature of the infrastructure being constructed. The generally limited vertical scale of the construction works, combined with the extent of hedgerow and woodland enclosure across much of the LVIA study area means that the extent of visibility, of the onshore cable route in particular, is relatively limited and contained to the onshore cable route and its immediate periphery. Field work has informed an understanding of the extent to which the landfall and onshore cable route would be visible.

29.5.4.2 Views and Visual Receptors

111. The visual receptors most susceptible to visual effects arising as a result of the onshore infrastructure, occur within the LVIA study area and in particular, in the

vicinity of the onshore substation and National Grid infrastructure. They include people within settlements and those driving on roads, visitors to tourist facilities or historic environment assets, and people engaged in recreational activities such as walking and cycling. Principal visual receptors are shown on ***Figure 29.4.***

112. The Preliminary Assessment (***Appendix 29.3***), identifies those visual receptors with potential to undergo significant impacts as a result of the onshore infrastructure. Baseline descriptions of these visual receptors are presented in the Technical Assessments (***Appendix 29.3***), along with the assessment of potential effects on the visual amenity resulting from the onshore infrastructure. The findings are summarised in ***section 29.6*** of this chapter. Presented below is an overview of the existing environment and principal visual receptors which occur in the LVIA study area.

113. Views experienced within the LVIA study area are influenced by the landform and features such as woodlands and built development. Views tend to be open, but with few commanding viewpoints or longer distance views, due to the gently undulating landform. The exceptions to this occur in views from the Suffolk Coastal Path, which affords panoramic views out to sea and along the coast. Within the LVIA study area, these views are influenced by the contrasts between coastal features, shingle beaches, cliffs, heathlands and plantation woodlands, with distinctive built elements including Sizewell A and B Nuclear Power Stations. The domed roof of Sizewell B is a landmark in views both along the coast, and towards the coast from inland areas. The double rows of high voltage electrical pylons which extend west from Sizewell also form notable features in views across the countryside within the LVIA study area. Views are often relatively contained by large woodland plantations, smaller scattered woodland, hedges and hedgerows trees, which combine to provide enclosure and containment - along with the undulating landscape and existing built development.

114. The settlement of Leiston is located adjacent to the northern edge of the LVIA study area, with a ribbon of urban development extending south to Aldringham and Knodishall. Saxmundham is another town located out with the western edge of the LVIA study area. The tourist destinations of Thorpeness and Aldeburgh are located on the Suffolk coast in the east of the LVIA study area, and the rural village of Friston is located in the south-west.

115. The construction works associated with the landfall would be viewed in a coastal context within the immediate area of coastline within the LVIA study area, between Sizewell and Thorpeness. In respect of the landfall, the principal visual receptors will be people walking on the Suffolk Coastal Path and Sandlings Walk, between Sizewell and Thorpeness, people visiting Sizewell Beach and Sizewell

Hall, and potentially residents at dwellings such as Dower House, Ness House and on the northern edges of Thorpeness.

116. The construction and operation of the onshore infrastructure would be viewed by these visual receptors near the coast, between Sizewell and Thorpeness, together with visual receptors located further inland within the LVIA study area. In respect of the onshore infrastructure, the principal visual receptors would be people walking on the Suffolk Coastal Path, the Sandling's Walk and other public rights of way in close proximity. Views of the onshore infrastructure may also be experienced by residents of settlements such as Leiston, Aldringham, Knodishall, Thorpeness and Friston, residents of scattered individual farm houses and estates, and by motorists travelling on the network of 'B' roads within the LVIA study area including the B1353, B1069 and B1122 as shown on ***Figure 29.4***.

117. The assessment presented in ***Appendix 29.3*** provides a full description of the principal visual receptors with potential to undergo significant impacts as a result of the onshore infrastructure.

29.5.4.3 Viewpoints

118. Consultations with the LVIA ETG has led to the agreement of viewpoint locations for use in the LVIA of the onshore substation and National Grid infrastructure, as listed in ***Table 29.7*** and shown on ***Figure 29.4.***

119. Representative viewpoints are selected to represent the experience of different types of visual receptor where larger numbers of viewpoints cannot all be included. Full written analysis of visual effects from these representative viewpoints is undertaken in the Technical Assessment (***Appendix 29.3***) for those viewpoints that may experience significant visual effects, while other viewpoints are scoped out in the Preliminary Assessment where no potential for significant effects has been identified. Visual representations of the onshore substation and National Grid substation have been produced, in ***Figures 29.13 – 29.25*** which show the location and baseline view panorama from each of the agreed viewpoints.

120. Viewpoints and photomontage visualisations have not been produced for the landfall or onshore cable route, owing to their underground location during the operational period.

Table 29.7 Viewpoints Included in Onshore LVIA

Viewpoint		Grid Reference	Distance from the onshore substation	Distance from the National Grid substation
1	Public Right of Way near Friston House	E641169 N260794	403m	362m
2	Friston, Church Road	E641319 N260543	538m	613m
3	Grove Road, near Pear Tree Farm	E641657 N261801	497m	422m
4	Friston, Grove Road	E641498 N260531	528m	672m
5	Public Right of Way, near Moor Farm	E640884 N261654	652m	474m
6	Friston, Village Green	E641198 N260337	772m	814m
7	Public Right of Way, east of Friston	E641877 N260560	639m	849m
8	B1121 Saxmundham Road, north of Friston	E640477 N260862	958m	791m
9	B1121 Aldeburgh Road, south of Friston	E41464 N259905	1.1km	1.3km
10	B1119 Saxmundham Road	E641095 N262490	1.2km	1.1km
11	Knodishall Hall	E642535 N261903	1.1km	1.2km
12	Knodishall Common	E642952 N260979	1.3km	1.5km
13	B1069 Snape Road	E642372 N259880	1.5km	1.7km

29.5.5 Anticipated Trends in Baseline Condition

121. The baseline character of the landscape in the LVIA study area is likely to change in the future as a result of the effects of climate change, land use policy, environmental improvements and development pressures, regardless of whether the proposed East Anglia ONE North project progresses to construction or not.

122. A range of policies impact on the management of the landscape, ranging from European Directive, national policy and regulation, through to community strategies and development frameworks. Landscape planning policies covering the coastal landscape within the study area, such as the AONB, generally seek

to conserve and enhance the natural beauty of the area, while recognising the need to adapt to inevitable change over time, particularly in such a dynamic coastal landscape shaped by coastal processes, and the need to respond to development pressures that reflect the changing needs of society.

123. There is overwhelming evidence that global climate change is occurring. Any notable change in climate is likely to present potential changes to the coastline of the study area in a variety of ways. The legislative framework already exists to ensure that no net loss of internationally important habitat occurs, but there remains a need to increase understanding of the potential effects of climate change on the characteristic landscapes of the study area and to develop longer term strategies that will mitigate any adverse effects of climate change.

124. Suffolk County Council has produced 'Suffolk Climate Action Plan 3' (2017) which presents a summary of the County's climate change strategy. The Action Plan states *'Extremes of weather are fast becoming the 'new normal', which presents particular challenges to this, the most vulnerable region in the UK to the impacts of climate change, and the most low-lying with up to 30 per cent of land below sea level.'* In respect of the study area associated with East Anglia ONE North, higher sea levels may affect the Suffolk coastline, with some coastal areas predicted to being lost to the sea. Droughts and flooding may affect the productivity of agricultural land and the stability of farm businesses, while woodlands and other semi- natural landscapes, may be affected both in dry periods and wet periods, with long-term water-logging in low-lying parts presenting a particular problem.

125. The nationally designated AONB landscape within the LVIA study area is subject to changes implemented from the aims and objectives of the Suffolk Coast and Heaths AONB Management Plan (Suffolk Coast and Heaths AONB 2013 - 2018). The baseline conditions of this AONB landscape are likely to change gradually over time in response to the implementation of actions set out in the AONB Management Plan (Section 5).

126. Recent development management decisions/planning decision precedent has established and accepted landscape change from offshore windfarm development in the seascape just outside the LVIA study area and is creating pressure for onshore infrastructure required to connect these large scale offshore windfarms. Greater Gabbard and Galloper substations are operational and located near to Sizewell. There are other offshore windfarms under construction or proposed in the offshore waters outside the LVIA study area. The proposed East Anglia ONE North project fits with the current approach to accommodate energy generation and transmission in the landscape.

127. EDF Energy's proposals for a new nuclear power station, Sizewell C, to north of Sizewell B are within the onshore study area and may have a notable change to the baseline landscape and visual conditions of the area to the north of the existing Sizewell Power Station, with proposals for a new nuclear power station, accommodation campus, new road and rail access and beach landing facility outlined in the Stage 2 consultation summary document (EDF 2016).

128. Further development pressures which may change the baseline conditions, include suburbanisation and increased tourist development influences, particularly around the coastal landscapes and established coastal towns within the study area, which have potential to increase the developed influence and reduce perceived naturalness of the coastline.

29.6 Potential Effects

29.6.1 Potential Effects during Construction

129. The potential effects during construction would occur in relation to the construction of the landfall, onshore cable route, onshore substation and National Grid infrastructure and will include potential effects on the landscape character and visual amenity. The impacts would relate principally to the construction process, and presence of associated plant, materials, infrastructure and temporary structures, as well as the presence of emerging structures, where they would be visible above ground.

130. ***Appendix 29.2*** and ***Appendix 29.3*** set out a Preliminary Assessment followed by the Technical Assessments of the potential for landscape and visual receptors within the LVIA study area to be significantly affected as a result of the onshore infrastructure associated with the proposed East Anglia ONE North project. In respect of potential effects during the construction phase, the summarised findings of these assessments are presented below in this chapter.

29.6.1.1 Potential Effects During Construction - Landfall

131. The landfall would be located close to the Suffolk Coast, on an inland area to the north of Thorpeness and south of Sizewell. The construction works at the landfall would comprise a HDD compound and two transition bays. The commitment to HDD would mean that all of the construction works would be offset inland from the coastal edge. No works would be undertaken on the coast and no access required to the dunes/shingle beach below the low cliffs, such that the recreational use and visual amenity would be protected.

29.6.1.1.1 Landscape Effects – Landfall

132. The construction of the landfall will result in **not significant** effects on the landscape character of the Coastal Dunes and Shingle Ridges LCT or the Estate Sandlands LCT as a whole, however there would be a **short-term significant**

effect in the very localised landscape within and immediately around the landfall. There is potential for direct changes to the physical landscape elements of this localised area of the Estate Sandlands LCT and the Suffolk Coast and Heaths AONB (as detailed in ***Appendix 29.2***), resulting from the HDD compound and construction of transition bays within the landfall search area, to the north of Thorpeness. There is likely to be a physical loss of hedgerows and scrub/heathland habitat within the footprint of the HDD compound. In the setting of the low coastal cliffs at the landfall, the addition of elements (temporarily during the construction period) will change the simple landscape composition and result in some changes to the sense of isolation at the coastal edges of this localised area of the Estate Sandlands LCT and Suffolk Coast and Heaths AONB (Area A) near the landfall.

29.6.1.1.2 Visual Effects - Landfall

133. The construction of the landfall will also result in **significant**, short-term and temporary effects on the views experienced by residents of the northern and western edges of Thorpeness; views experienced by motorists travelling on a short section of the B1353 to the east of Thorpeness; and views experienced by people walking on short sections of the Suffolk Coastal Path and Sandling's Walk where the route of these paths crosses the landfall. Visible landfall construction works which are likely to result in change to views from these localised areas consist of construction consolidation sites, installation of HDD compound and transition bays within the landfall and vehicles/machinery in use temporarily, during the construction period.

134. The landfall construction works will be relatively small in scale thus, the localised extent of the significant effects. Furthermore, the construction works of the duct installation would be temporary, making the effects short term. The reinstatement of the majority of the land and landscape elements at the end of the construction period would make the effects temporary.

135. The potential landscape and visual effects of the landfall during construction are summarised in ***Table 29.8*** below, which summarises the assessment for each landscape and visual receptor in respect of the potential effects of the landfall during construction.

Table 29.8 Summary of Potential Effects During Construction - Landfall

Receptor	Sensitivity to change	Magnitude of change (without mitigation)	Significance of Effect (without mitigation)
Landscape Effects			
LCT05 Coastal Dunes and Shingle Ridges	Medium-high	Low	**Not significant**, short-term, temporary
Beach and coastal cliffs	High	Low	**Not significant**, short-term, temporary
LCT07 Estate Sandlands	Medium-high	Medium-high on localised area to the north of Thorpeness within landfall.	**Significant**, short-term, temporary
Agricultural land	Low	Medium	**Not significant**, short-term, temporary
Hedgerows	Medium	Medium	**Not significant**, short-term, temporary
Scrub/heathland	High	Medium	**Significant**, short-term, temporary
Suffolk Coast and Heaths AONB (and Heritage Coast) Area A: AONB between Thorpeness, Sizewell and Leiston	Medium-high	Medium-high on localised area to the north of Thorpeness within landfall.	**Significant**, short-term, temporary
Suffolk Coast and Heaths AONB and Heritage Coast Area B: AONB between Thorpeness, Aldeburgh and Snape	Medium-high	Low	**Not significant**, short-term, temporary
Suffolk Coast and Heaths AONB and Heritage Coast Area C: AONB Sizewell and Dunwich Forest	Medium-high	Low	**Not significant**, short-term, temporary
Visual Effects			
Thorpeness (residents)	High	High in views from a localised area on the northern and north-western edge of Thorpeness, adjacent to the landfall. Negligible from the majority of the central and southern areas of the settlement.	**Significant**, short-term and temporary along north and north-west edge of Thorpeness, adjacent to the landfall. **Not significant**, short-term and temporary from the majority of the central and southern areas of the settlement.
B1353 Thorpeness Road (motorists)	Medium	High from a short (750m) section of the B1353, to the east of Thorpeness, where	**Significant**, short-term and temporary over a short (750m) section of the

Receptor	Sensitivity to change	Magnitude of change (without mitigation)	Significance of Effect (without mitigation)
		the landfall is located immediately to the north of the road. Negligible from the remainder of the B1353.	B1353, to the east of Thorpeness. **Not significant**, short-term and temporary over remainder of B1353.
Suffolk Coastal Path (walkers)	High	High over a short (1.0km) section of the route, to the north of Thorpeness, where the route of the path crosses the landfall. Negligible over the remainder of the Suffolk Coastal Path.	**Significant**, short-term and temporary over a short (1.0km) section of the route, to the north of Thorpeness, where the route of the path crosses the landfall. **Not significant**, short-term and temporary over the remainder of the Suffolk Coastal Path.
Sandlings Walk (walkers)	Medium - high	High over a short (1km) section of the route, to the north of Thorpeness, where the route of the path crosses the landfall. Negligible over the remainder of the Sandling's Walk.	**Significant**, short-term and temporary over a short (1km) section of the route, to the north of Thorpeness, where the route of the path crosses the landfall. **Not significant**, short-term and temporary over the remainder of the Sandling's Walk.

29.6.1.2 Potential Effects During Construction – Onshore Cable Route

136. The onshore cable route will connect the construction works at landfall, to the north of Thorpeness, with the onshore substation, to the north of Friston, covering a route of approximately 9km, as shown in ***Figure 29.1***. The onshore cable route will mainly be routed through agricultural areas to avoid settlements and semi-natural landscapes. From the construction works at the landfall on the Suffolk Coast to the north of Thorpeness, the onshore cable route is routed north through the AONB towards Sizewell, around the northern side of 'The Walks', an area of semi-natural landscape including heath and woodland to the north of Thorpeness. At Sizewell Gap Road, the onshore cable route then takes a route south-west out of the AONB, to the south of the settlements of Leiston and Aldringham and then west, skirting the southern side of Coldfair Green. The route would continue across the agricultural land to the north-west to join with the substation location to the north of Friston. Aerial imagery of the proposed onshore development area is shown on ***Figures 29.6a*** to ***29.6g***.

29.6.1.2.1Landscape Effects – Onshore Cable Route

137. The potential for direct changes to physical landscape elements within the onshore cable route occur primarily within the Estate Sandlands LCT (05), including areas of agricultural land, woodland, hedgerows, scrub/heathland habitat to be felled/cleared within the footprint of the onshore cable route which is located almost entirely within this Estate Sandlands LCT (05). Physical changes result in direct effects to landscape elements in their own right and changes to the character of the LCT's pattern of elements.

138. The effect of the construction of the onshore infrastructure on all agricultural land and the vast majority of hedgerows and trees is assessed as **not significant**. In a small number of locations, where notable hedgerows and trees would be removed, localised **significant** effects would occur. The largest physical loss of mature woodland occurs at the Aldeburgh Road (Raidsend), on land to the south of Aldringham Court, where up to 0.9ha of mature woodland will be felled to facilitate the crossing of Aldeburgh Road. As result, there will be **significant** direct effects resulting from the loss of woodland, localised **significant** effects on the perceived landscape character of the SLA and visual amenity experienced from local residences and the B1122 resulting from the construction of the onshore cable route.

139. The construction of the onshore cable route, its associated construction consolidation sites and trenchless crossing compounds will introduce new elements during the construction period, which will temporarily change the character of the landscape and pattern of elements within the onshore cable development area. The introduction of the onshore cable route construction works would constitute a new, but relatively moderate alteration to the perceived character, with the increase in construction influence at variance to some of the key characteristics of the LCT (such as its natural qualities, remoteness/isolation and open views). Potential changes assessed to be of medium magnitude to the pattern of landscape elements/perceived character of the LCT within and immediately adjacent to the onshore cable route, during construction period.

140. The change to the landscape character of the Estate Sandlands LCT resulting from the physical changes in landscape elements and the addition of new elements during construction is assessed as **significant,** short-term and temporary within and immediately adjacent to the onshore cable route. The magnitude of change drops notably with increasing distance from the onshore cable route, such that the effects on the wider landscape character of the Estate Sandlands LCT, resulting from the onshore cable route construction, is assessed as **not significant**, short-term and temporary during the construction period.

141. The construction of the onshore cable route will introduce new elements within the AONB during the construction period, which will temporarily change the character of the landscape and pattern of elements within the onshore cable route on its route through the AONB from north of Thorpeness to Sizewell (Area A) and the edge of the AONB near Leiston (Area A). The works would constitute a new, but relatively moderate alteration to the perceived character, with the increase in construction/development influence at variance to some of the key characteristics of the AONB (such as its natural qualities, remoteness/isolation and open views). The change to the landscape character of the AONB (in Area A) resulting from the physical changes in landscape elements and the addition of new elements during construction is assessed as **significant,** short-term and temporary within and immediately adjacent to the onshore cable route (in the same area where it has significant effects on the Estate Sandlands LCT).

142. The effects of the construction of the onshore cable route have been assessed against the special qualities of the AONB (in full in ***Appendix 29.2***). The onshore cable route is located within the AONB, extending for approximately 3km in a dog-leg between the construction works at the landfall to the north of Thorpeness, Sizewell Gap Road and the edge of the AONB near Leiston (Area A). The onshore cable route construction will result in direct changes to the landscape character of the AONB along this localised section of the cable route during the construction period and the effects of the onshore cable route are assessed as being **significant**, but short-term and temporary on the landscape/scenic quality, relative wildness, tranquillity and natural heritage features of this section within the AONB, during the construction period.

143. After exiting the AONB, the onshore cable route then takes a route which runs parallel to the western edge of the AONB between Leiston and Aldringham. In this area, out with the AONB, there will be no direct effects from construction of the onshore cable route on the landscape elements/physical features of the AONB (Area B). There will be **no significant** effects on the landscape and scenic quality of the setting, relative wildness, tranquillity, natural and cultural heritage features of the AONB as a result of visibility of the construction of the onshore cable route when it is in close proximity to the AONB boundary.

144. To the south of Aldringham, the onshore cable route extends west away from the coastal areas of the AONB towards the onshore substation, becoming increasingly distant from the coastal part of the AONB, while running parallel to, and approximately 1km north of the area of AONB covering the River Alde estuary. The construction of the onshore cable route over this section will have **no significant** effects on the special qualities of the AONB.

145. The effect of the onshore cable route during construction is therefore only assessed as **significant**, short-term and temporary on the character of the AONB within a localised area between Thorpeness, Sizewell and Leiston (Area A) but is assessed as **not significant**, short-term and temporary on the wider AONB within the LVIA study area (Areas B and C).

29.6.1.2.2 Visual Effects – Onshore Cable Route

146. The construction of the onshore cable route will also result in visual effects, temporarily during the construction period, when the construction works will be seen by local residents, motorists using roads and walkers using footpaths crossing the onshore cable route. The onshore cable route construction is assessed as having **significant,** short-term and temporary visual effects on views experienced by residents from the very edges of Aldringham, Coldfair Green and Friston that are adjacent to and are likely to have views of the construction of the onshore cable route. However, the majority of the residential areas of these settlements will have no direct views of the onshore infrastructure and experience **not significant** effects.

147. In terms of views from roads, **significant,** short-term and temporary visual effects are assessed as occurring to views experienced by motorists over short sections of the B1353 Thorpeness Road, B1122 Aldeburgh Road, B1069 Snape Road and B1121 Aldeburgh – Saxmundham Road, which may come in close proximity to the construction consolidation compounds or trenchless crossing compounds, while effects would be **not significant** on all remaining parts of these roads and other roads and railways. The visual effects of the construction of the onshore cable route are also assessed as being **significant** on views experienced by walkers over short sections of the Suffolk Coastal Path, the Sandlings Walk and the Suffolk Coastal Cycle Route where these recreational routes cross the onshore cable route, while the effects on remaining sections of these recreational routes would be **not significant**.

148. The potential landscape and visual effects of the onshore cable route during construction are assessed in full in ***Appendix 29.2*** and ***29.3*** and summarised in ***Table 29.9***.

Table 29.9 Summary of Potential Effects During Construction – Onshore Cable Route

Receptor	Sensitivity to change	Magnitude of change (without mitigation)	Significance of Effect (without mitigation)
Landscape Effects			
LCT 01 Ancient Estate Claylands Area 1A North of Friston, between Grove Road, Fristonmoor and Saxmundham Road	Medium-high	Medium on localised area to north of Friston at western end of onshore cable route near the onshore substation and National Grid substation. Low to negligible over remaining areas LCT.	**Significant**, short-term and temporary on localised area to north of Friston at western end of onshore cable route near the onshore substation and National Grid substation. **Not significant**, short-term and temporary over remaining areas of LCT.
Agricultural land (within Area 1A)	Low	High	**Not significant**, short-term, temporary
Woodland (within Area 1A)	High	Low	**Not significant**, short-term, temporary
Hedgerows (within Area 1A)	Medium	Medium	**Not significant**, short-term, temporary
LCT 01 Ancient Estate Claylands Area 1B East of Saxmundham	Medium-high	Low	**Not significant**, short-term, temporary
Ancient Estate Claylands LCT (01) Area 1C East of Grove Wood, Knodishall	Medium-high	Medium	**Significant**, short-term, temporary
Agricultural land (within Area 1C)	Low	High	**Not significant**, short-term, temporary
Woodland (within Area 1C)	High	None	**Not significant**, short-term, temporary
Hedgerows (within Area 1C)	Medium	Medium	**Not significant**, short-term, temporary
LCT 01 Ancient Estate Claylands Area 1D Leiston and Theberton	Medium-high	Negligible	**Not significant**, short-term, temporary
LCT05 Coastal Dunes and Shingle Ridges	Medium-high	Negligible	**Not significant**, short-term, temporary
LCT 06 Coastal Levels	Medium	Medium	**Not significant**, short-term, temporary

Receptor	Sensitivity to change	Magnitude of change (without mitigation)	Significance of Effect (without mitigation)
Area 6A Hundred River Valley, south of Aldringham			
LCT 06 Coastal Levels Area 6A Former large meare to the south of Thorpeness	Medium	None	**Not significant**, short-term, temporary
LCT 06 Coastal Levels Area A Marshes of the Minsmere Level	Medium	None	**Not significant**, short-term, temporary
LCT 07 Estate Sandlands Area 7A Thorpeness to Aldringham and Friston	Medium-high	Medium-high within and adjacent to the onshore cable route/ Low on the wider character of the Estate Sandlands LCT	**Significant**, short-term and temporary within and adjacent to the onshore cable route. **Not significant**, short-term and temporary on the wider character of the Estate Sandlands LCT
Agricultural land (within Area 7A)	Low	High	**Not significant**, short-term, temporary
Woodland (within Area 7A)	High	Medium-high	**Significant**, short-term, temporary
Hedgerows (within Area 7A)	Medium	Medium	**Not significant**, short-term, temporary
Scrub/heathland (within Area 7A)	High	Medium-low	**Not significant**, short-term, temporary
LCT 07 Estate Sandlands Area 7B Sizewell and north of Leiston to Dunwich Forest	Medium-high	Low	**Not significant**, short-term, temporary
LCT 07 Estate Sandlands Area 7C Aldeburgh to Snape	Medium-high	Low	**Not significant**, short-term, temporary
Suffolk Coast and Heaths AONB and Heritage Coast Area A: AONB between Thorpeness, Sizewell and Leiston	High		
Landscape quality		High	**Significant**, short-term, temporary

Receptor	Sensitivity to change	Magnitude of change (without mitigation)	Significance of Effect (without mitigation)
Scenic quality		High	**Significant**, short-term, temporary
Relative wildness		Medium-high	**Significant**, short-term, temporary
Relative tranquillity		Medium	**Significant**, short-term, temporary
Natural heritage features		Medium	**Significant**, short-term, temporary
Cultural heritage		Low	**Not significant**, short-term, temporary
Suffolk Coast and Heaths AONB and Heritage Coast Area B: AONB between Thorpeness, Aldeburgh and Snape	Medium-high		
Landscape quality		Low	**Not significant**, short-term, temporary
Scenic quality		Low	**Not significant**, short-term, temporary
Relative wildness		Low	**Not significant**, short-term, temporary
Relative tranquillity		Low	**Not significant**, short-term, temporary
Natural heritage features		Low	**Not significant**, short-term, temporary
Cultural heritage		Low	**Not significant**, short-term, temporary
Suffolk Coast and Heaths AONB and Heritage Coast Area C: AONB Sizewell and Dunwich Forest	Medium		
Landscape quality		Negligible	**Not significant**, short-term, temporary
Scenic quality		Negligible	**Not significant**, short-term, temporary
Relative wildness		Negligible	**Not significant**, short-term, temporary

Receptor	Sensitivity to change	Magnitude of change (without mitigation)	Significance of Effect (without mitigation)
Relative tranquillity		Negligible	**Not significant**, short-term, temporary
Natural heritage features		Negligible	**Not significant**, short-term, temporary
Cultural heritage		Negligible	**Not significant**, short-term, temporary
Landscape quality		Negligible	**Not significant**, short-term, temporary
Hundred River Valley SLA Area A: Hundred River Valley, south of Aldringham	Medium	Medium-high over a local area at Raidsend, due to the felling of mature woodland	**Significant**, short-term, temporary
Hundred River Valley SLA Area B: Majority of the of the SLA between Aldringham and Coldfair Green	Medium	Low on the majority of the of the SLA between Aldringham and Coldfair Green.	**Not significant**, short-term, temporary
Visual Effects			
Leiston (residents)	High	Negligible from the majority of the settlement Low from localised areas along the south and eastern edge of Leiston	**Not significant**, short-term, temporary
Aldringham (residents)	High	High where it crosses the Hundred River and Aldeburgh Road, where the construction of the onshore cable route will be visible in views from nearby dwellings and felling of a notable area of mature woodland at Raisdend is required. Low on its route to the east of the settlement crossing the B1353 Thorpeness Road	**Significant**, short-term and temporary along Aldeburgh Road **Not significant**, short-term, temporary
Coldfair Green (residents)	High	High in views from a localised area on the southern edge of the settlement. Negligible from the majority of the settlement where	**Significant**, short-term and temporary on south edge of Coldfair Green. **Not significant**, short-term, temporary from the majority of the settlement.

Receptor	Sensitivity to change	Magnitude of change (without mitigation)	Significance of Effect (without mitigation)
		there will be no direct views of the onshore infrastructure.	
Friston (residents)	High	Medium to high from localised area on the northern edges of Friston. Negligible from the majority of central and southern areas of Friston.	**Significant**, short-term, temporary from the northern edges of Friston. **Not significant**, short-term, temporary from the majority of central and southern areas of Friston.
B1353 Thorpeness Road (motorists)	Medium	High over a short section of the B1353 to the east of Aldringham where the onshore cable route crosses the B1353. Negligible over the remainder of the B1353.	**Significant**, short-term, temporary over section east of Aldringham. **Not significant**, short-term and temporary over remainder of B1353.
B1122 Aldeburgh Road (motorists)	Medium	High over a short section of the B1122, to the south of Aldringham, where the onshore cable route crosses the B1122. Negligible over the remainder of the B1122.	**Significant**, short-term, temporary over a short section of the B1122, to the south of Aldringham, where the onshore cable route crosses the B1122. **Not significant**, short-term, temporary over the remainder of the B1122.
B1069 Snape Road (motorists)	Medium	High over a shortsection of the B1069, to the south of Coldfair Green, where the onshore cable route crosses the B1069. Negligible over the remainder of the B1069.	**Significant**, short-term, temporary over a short section of the B1069, to the south of Coldfair Green, where the onshore cable route crosses the B1069. **Not significant**, short-term, temporary over the remainder of the B1069.
B1121 Aldeburgh – Saxmundham Road (motorists)	Medium	Medium over a short section of the B1121, in the southern part of Friston, where there are views to the onshore cable route running in parallel to the road. Negligible over the remainder of the B1121.	**Not significant**, short-term, temporary
Suffolk Coastal Path (walkers)	High	High over a short 1.5km section of the route to the north of Thorpeness, where the onshore cable route	**Significant**, short-term, temporary over a short 1.5km section of the route to the north of Thorpeness,

Receptor	Sensitivity to change	Magnitude of change (without mitigation)	Significance of Effect (without mitigation)
		crosses or is adjacent to the Suffolk Coastal Path. Negligible over the remainder of the Suffolk Coastal Path.	where the onshore cable route crosses or is adjacent to the Suffolk Coastal Path **Not significant**, short-term, temporary over the remainder of the Suffolk Coastal Path.
Sandlings Walk (walkers)	Medium - high	High over two sections of the route: from the edge of Friston to Great Wood for approximately 3.5km where the route runs parallel to and subsequently crosses the onshore cable route; and from the edge of Aldringham Common to Sizewell for approximately 2.0km where the route crosses through and then runs parallel to the onshore cable route. Negligible for the remainder of the route of the Sandling's Walk.	**Significant**, short-term and temporary over approx. 3.5km section north-east of Friston and approx. 2km section south of Sizewell. **Not significant**, short-term, temporary for the remainder of the route.
Suffolk Coastal Cycle Route (cyclists)	Medium - high	High over a short 1km section of the route, along Grove Road between Friston and Grove Wood, where the onshore cable route crosses or is adjacent to the route of Suffolk Coastal Cycle Route. Negligible for the remainder of the route of the Suffolk Coastal Cycle Route.	**Significant**, short-term and temporary over approx. 1km section on Grove Road between Friston and Grove Wood. **Not significant**, short-term, temporary for the remainder of the route.

29.6.1.3 Potential Effects During Construction – Onshore Substation and National Grid Substation

149. The onshore substation and National Grid substation are located to the north of the village of Friston and to the north of Grove Wood/Grove Road, as shown on ***Figure 29.4***.

29.6.1.3.1 Landscape Effects – Onshore Substation and National Grid Substation

150. In summary, the main area where changes to the perceived character occur as a result of the construction of the onshore substation and National Grid infrastructure is within a localised area of the Ancient Estate Claylands LCT (01) and Estate Sandlands LCT (07) to the north of Friston, between Grove Road and

Fristonmoor. The physical effect of the construction of the onshore substation and National Grid substation on agricultural land and hedgerows is assessed as being **not significant**, however **significant** effects on the character of the landscape are assessed as occurring within a localised area of approximately 1km around the onshore substation and National Grid substation, including significant physical effects on a patch of vegetation within the eastern part of the onshore substation, which requires to be felled. The construction of the onshore substation and National Grid substation will result in a large-scale change to the local character of this area of the LCT, during construction of the onshore substation, construction compound and access roads, together with the increased activity of vehicles, machinery, cranes and the stockpiling of materials that will be needed during construction. The construction works will result in changes in ground conditions/profiles, installation of substation platforms on agricultural land, and the addition of compounds, fencing and installation of electrical infrastructure. As the onshore substation and National Grid substation are constructed, the form of the buildings and external electrical infrastructure will take shape during the construction period and influence the existing landscape character. The built forms will increase the prominence of development components in the landscape through the introduction of large-scale buildings and introduce complex electrical infrastructure, increasing the influence of electrical infrastructure on the character of this area.

151. The construction of the onshore substation and National Grid substation will have **not significant** effects on the character or special qualities of the AONB. The onshore substation and National Grid substation are located outside the AONB and its immediate setting, approximately 1.6 km to the north of the AONB at its closest point (where the AONB covers the estuary of the River Alde) and 3.7 km to the west of the edge of the main 'coastal' area of the AONB (near Aldringham (Area A)). The special qualities of the AONB will not be subject to change as a result of the construction of the onshore substation and National Grid infrastructure, primarily due the distance of the construction of the onshore substation and National Grid infrastructure from the AONB and their limited visibility from within the AONB.

29.6.1.3.2Visual Effects - Onshore Substation and National Grid Substation

152. The undulating agricultural land and large woodland blocks at Grove Wood and Laurel Covert will provide notable visual containment of the onshore substation and National Grid substation in the landscape. In particular, they entirely screen views of the onshore substation in views from the east (such as from Knodishall/Coldfair Green). In views from areas where the onshore substation and National Grid substation will be visible, Grove Wood and Laurel Covert provide visual containment in terms of the spread of development vertically, since

these woodlands are higher than the onshore substation and National Grid substation construction works. Despite the notable screening provided in the local landscape, the construction of the onshore substation and National Grid substation are assessed as having **significant** visual effects on residents of Friston, as represented by Viewpoints 1, 2, 4, and 9; people walking on the local public right of way network to the north of Friston (between Friston and Fristonmoor) as represented by Viewpoints 2, 5; residents of scattered rural dwellings near Friston, as represented by Viewpoints 5 and 8; motorists travelling on the B1121 Saxmundham Road, to the north of Friston, as represented by Viewpoint 8; and motorists/cyclists travelling on Grove Road immediately passing the onshore substation and National Grid substation, between Friston and Grove Wood.

153. These **significant** visual effects would all occur within approximately 1.1 km of the onshore substation, making them localised, and they will also occur temporarily over the short-term, during the construction period. These **significant** visual effects occur where the construction of the onshore substation and National Grid substation will be visible at relatively close distances, resulting in medium to high changes to views, due to the size, extent and close proximity of the onshore substation, National Grid substation and construction compounds, together with fencing, access road, vehicles, machinery, cranes, accommodation and the stockpiling of subsoil/topsoil needed during the construction period. During the construction period, the built form of the onshore substation and National Grid substation will take shape during the construction and installation of the substation platforms, GIS building/control room and electrical infrastructure. With progress through the construction period, the built forms of the constructed infrastructure will increase the influence of large buildings and infrastructure, such that electrical infrastructure becomes the prevailing feature of the view. National Grid overhead line realignments works will also be visible during the construction period as described in ***Chapter 5 Project Description***.

154. The potential landscape and visual effects of the onshore substation and National Grid infrastructure during construction are assessed in full in ***Appendix 29.2*** and ***29.3*** and summarised in ***Table 29.10***.

Table 29.10 Summary of Potential Effects During Construction – Onshore Substation and National Grid Substation

Receptor	Sensitivity to change	Magnitude of Change (without mitigation)	Significance of Effect (without mitigation)
Landscape Effects			
LCT 01 Ancient Estate Claylands Area 1A North of Friston, between Grove Road, Fristonmoor and Saxmundham Road	Medium-high	High on localised area to north of Friston within approximately 1.0km around the onshore substation and National Grid substation. Low to negligible over remaining areas of the LCT.	**Significant**, short-term and temporary on localised area to north of Friston within approximately 1.0km around the onshore substation and National Grid substation. **Not significant**, short-term and temporary over remaining areas of LCT.
Agricultural land (within Area 1A)	Low	High	**Not significant**, short-term, temporary
Woodland (within Area 1A)	High	None	**Not significant**, short-term, temporary
Hedgerows (within Area 1A)	Medium	Medium	**Not significant**, short-term, temporary
LCT 01 Ancient Estate Claylands Area 1B East of Saxmundham	Medium-high	Low	**Not significant**, short-term, temporary
Ancient Estate Claylands LCT (01) Area 1C East of Grove Wood, Knodishall	Medium-high	Negligible	**Not significant**, short-term, temporary
Agricultural land (within Area 1C)	Low	None	**Not significant**, short-term, temporary
Woodland (within Area 1C)	High	None	**Not significant**, short-term, temporary
Hedgerows (within Area 1C)	Medium	None	**Not significant**, short-term, temporary
LCT 01 Ancient Estate Claylands Area 1D Leiston and Theberton	Medium-high	Negligible	**Not significant**, short-term, temporary
LCT05 Coastal Dunes and Shingle Ridges	Medium-high	None	**Not significant**, short-term, temporary
LCT 06 Coastal Levels	Medium	None	**Not significant**, short-term, temporary

Receptor	Sensitivity to change	Magnitude of Change (without mitigation)	Significance of Effect (without mitigation)
Area 6A Hundred River Valley, south of Aldringham			
LCT 06 Coastal Levels Area 6A Former large meare to the south of Thorpeness	Medium	None	**Not significant**, short-term, temporary
LCT 06 Coastal Levels Area 6A Marshes of the Minsmere Level	Medium	None	**Not significant**, short-term, temporary
LCT 07 Estate Sandlands Area 7A Thorpeness to Aldringham and Friston	Medium-high	High on localised area to north of Friston within approximately 1.0km around the onshore substation and National Grid substation. Low to negligible over remaining areas of the LCT.	**Significant**, short-term and temporary on localised area to north of Friston within approximately 1.0km around the onshore substation and National Grid substation. **Not significant**, short-term and temporary over remaining areas of LCT.
Agricultural land (within Area 7A)	Low	Low	**Not significant**, short-term, temporary
Woodland (within Area 7A)	High	Medium	**Significant**, short-term, temporary
Hedgerows (within Area 7A)	Medium	Low	**Not significant**, short-term, temporary
LCT 07 Estate Sandlands Area 7B Sizewell and north of Leiston to Dunwich Forest	Medium-high	Low	**Not significant**, short-term, temporary
LCT 07 Estate Sandlands Area 7C Aldeburgh to Snape	Medium-high	Low	**Not significant**, short-term, temporary
Suffolk Coast and Heaths AONB and Heritage Coast Area A: AONB between Thorpeness, Sizewell and Leiston	High		
Landscape quality		Low	**Not significant**, short-term, temporary

Receptor	Sensitivity to change	Magnitude of Change (without mitigation)	Significance of Effect (without mitigation)
Scenic quality		Low	**Not significant**, short-term, temporary
Relative wildness		Negligible	**Not significant**, short-term, temporary
Relative tranquillity		Negligible	**Not significant**, short-term, temporary
Natural heritage features		None	**Not significant**, short-term, temporary
Cultural heritage		Negligible	**Not significant**, short-term, temporary
Hundred River Valley SLA	Medium	Negligible	**Not significant**, short-term, temporary
Visual Effects			
Viewpoint 1: Public Right of Way near Friston House	Walkers: medium-high Residents: high	High	**Significant**, short-term, temporary
Viewpoint 2: Friston, Church Road	Walkers: medium-high Residents: high	High	**Significant**, short-term, temporary
Viewpoint 3: Grove Road, near Pear Tree Farm	Motorists: medium	Negligible-low	**Not significant**, long-term and temporary
Viewpoint 4: Friston, Grove Road	Walkers: medium-high Residents: high Motorists: medium	High	Walkers and residents: **Significant**, short-term, temporary Motorists: **Not significant**, short-term, temporary
Viewpoint 5: Public Right of Way, near Moor Farm	Walkers: medium-high Residents: high	High	**Significant**, short-term, temporary
Viewpoint 6: Friston, Village Green	Residents: high Motorists: medium-high	Low	**Not significant**, short-term, temporary
Viewpoint 7: Public Right of Way, east of Friston	Walkers: medium-high	None	**Not significant**, short-term, temporary
Viewpoint 8: B1121 Saxmundham Road, north of Friston	Residents: high Motorists: medium	Medium-high	Residents: **Significant**, short-term, temporary

Receptor	Sensitivity to change	Magnitude of Change (without mitigation)	Significance of Effect (without mitigation)
			Motorists: **Significant**, short-term, temporary
Viewpoint 9: B1121 Aldeburgh Road, south of Friston	Residents: high Motorists: medium	Medium	Residents: **Significant**, short-term, temporary Motorists: **Not significant**, short-term, temporary
Viewpoint 10: B1119 Saxmundham Road	Motorists: medium	Low	**Not significant**, short-term, temporary
Viewpoint 11: Knodishall Hall	Residents: high	None	**Not significant**, short-term, temporary
Viewpoint 12: Knodishall Common	Walkers: medium-high	Negligible	**Not significant**, short-term, temporary
Viewpoint 13: B1069 Snape Road	Motorists: medium	None	**Not significant**, short-term, temporary
Friston Area A (northern part)	Residents: high	Medium-high to high	**Significant**, short-term, temporary
Friston Area B (central part)	Residents: high	Low	**Not significant**, short-term, temporary
Friston Area C (Aldeburgh Road)	Residents: high	Medium	**Significant**, short-term, temporary
Friston Area D (southern part)	Residents: high	Low	**Not significant**, short-term, temporary
B1121 Aldeburgh / Saxmundham Road Section A Saxmundham to north of Moor Farm (Saxmundham Road)	Motorists: medium	Negligible	**Not significant**, short-term, temporary
B1121 Aldeburgh / Saxmundham Road Section B North of Moor Farm to Friston House (Saxmundham Road)	Motorists: medium	Medium-high	**Significant**, short-term, temporary
B1121 Aldeburgh / Saxmundham Road: Section C Friston House through Friston (Saxmundham Road)	Motorists: medium	Low	**Not significant**, short-term, temporary

Receptor	Sensitivity to change	Magnitude of Change (without mitigation)	Significance of Effect (without mitigation)
B1121 Aldeburgh / Saxmundham Road: Section D South of Friston (Aldeburgh Road)	Motorists: medium	Medium	**Not significant**, short-term, temporary
Grove Road Section A Saxmundham Road to Grove Wood	Motorists: medium	Low to negligible	**Not significant**, short-term, temporary
Grove Road Section B Grove Wood (Manor Farm) to northern edge of Friston	Motorists: medium	High	**Significant**, short-term, temporary
Grove Road: Section C through Friston	Motorists: medium	Low	**Not significant**, short-term, temporary
Suffolk Coastal Cycle Route: Section A Northern edge of study area to Grove Wood	Cyclists: medium - high	Low to negligible	**Not significant**, short-term, temporary
Suffolk Coastal Cycle Route: Section B Grove Wood (Manor Farm) to northern edge of Friston	Cyclists: medium - high	High	**Significant**, short-term, temporary
Suffolk Coastal Cycle Route: Section C Grove Road through Friston	Cyclists: medium - high	Low	**Not significant**, short-term, temporary
Sandling's Walk: Section A Southern edge of study area at Snape to Friston (Grove Road)	Medium - high	Low Negligible	**Not significant**, short-term, temporary
Sandling's Walk: Section B Friston (Grove Road) to Sloe Lane (Billeaford Hall)	Medium - high	Low	**Not significant**, short-term, temporary
Sandling's Walk: Section C Sloe Lane (Billeaford Hall) to Aldringham Common	Medium - high	Negligible	**Not significant**, short-term, temporary
Sandling's Walk: Section D Aldringham Common to Sizewell	Medium - high	Low	**Not significant**, short-term, temporary

Receptor	Sensitivity to change	Magnitude of Change (without mitigation)	Significance of Effect (without mitigation)
Sandling's Walk: Section E Sizewell to northern edge of study area south of East Bridge	Medium - high	Negligible	**Not significant**, short-term, temporary

155. During the construction phase, mitigation woodland and hedgerow planting will have been undertaken around the onshore substation and National Grid substation, as presented on ***Figure 29.11***. In the early years of growth, recently planted cell-grown trees and hedgerows will be establishing, and are assumed to have good vigour, but likely to have limited screening effects in the landscape.

29.6.2 Potential Effects during Operation

156. The potential effects of the onshore infrastructure during operation will relate principally to the presence of the onshore substation and National Grid substation. It is anticipated that once operational, the potential effects of the landfall and onshore cable route would be **not significant due to** their presence underground. The assessment of these components during the operational phase has been scoped out of the LVIA, as agreed through the scoping process, with the exception of the removal of woodland at the Aldeburgh Road crossing (Raidsend) which is assessed as an operational impact.

157. ***Appendix 29.2*** and ***Appendix 29.3*** set out a Preliminary Assessment followed by the Technical Assessments of the potential for landscape and visual receptors within the LVIA study area to be significantly affected as a result of the onshore infrastructure associated with the proposed East Anglia ONE North project.

29.6.2.1 Potential Effects during Operation – Onshore Cable Route

29.6.2.1.1 Landscape Effects – Onshore Cable Route

158. The largest physical loss of mature woodland as a result of the onshore cable route occurs at Raidsend, on land to the south of Aldringham Court, where up to 0.9ha of mature woodland will be felled to facilitate the crossing of Aldeburgh Road. At this location, the onshore cable route is routed across the woodland to the south of Aldringham Court Nursing Home as this is the only identified location where the cable route can cross Aldeburgh Road (***section 4.5.5.7***). The Applicant has committed to reducing the cable swathe to 16.1m for East Anglia ONE North alone, to retain as many trees as possible at this location. The physical effect of the onshore cable route arising due to the physical loss of this landscape element, the mature woodland at Raidsend, is assessed as **significant**, long-term and permanent. The change to the perceived character in the vicinity of this

woodland, within a localised area of the Estate Sandlands LCT and the Hundred River Valley SLA, is also assessed as being **significant**, long-term and permanent due the physical loss of this woodland landscape element and the enclosure and character it provides at a local level, as part of the local landscape character of the LCT/SLA. The changes to the setting of the AONB during the operational period, as a result of the felling of mature woodland to facilitate the crossing of Aldeburgh Road, are assessed as **not significant**.

159. The significant operational effects of the onshore cable route on the woodland landscape element and local landscape character cannot be avoided or fully mitigated by re-instatement, as the onshore cable route cannot be re-planted with woodland, since it requires to be kept clear of woodland vegetation during the operational period over the long-term. Land at Raidsend will be reinstated, potentially with the aim of establishing heathland over the onshore cables, with the potential for woodland to be retained or further established along the outer edges of the onshore cable corridor, outside a minimum offset distance from the onshore cables. The landscape and ecological mitigation proposals for this area at the Aldeburgh Road crossing will be presented within the OLEMS submitted with the DCO application.

29.6.2.1.2Visual Effects – Onshore Cable Route

160. The loss of mature woodland as a result of the onshore cable route at Raidsend, to the south of Aldringham Court, will also give rise to visual effects where people experience changes in views that are currently influenced by this woodland in the baseline.

161. The felling of this area of mature woodland at Raidsend to allow for the construction of the onshore cable route will be visible in views along the B1122 Aldeburgh Road and will change the visual amenity experienced from the road, creating more open views from this section, which is currently enclosed on either side by mature woodland. **Significant**, long-term and permanent effects will occur to views experienced by motorists from a short section of the B1122 to the south of Aldringham where the onshore cable route crosses the road and mature woodland at Raidsend.

162. The visual amenity experienced by residents of the local area around Aldeburgh Road and Fitches Lane is also likely to be changed, resulting in more open views on either side of the road (which are currently contained by the woodland) and potential changes to views in the area near Aldringham Court. **Significant**, long-term and permanent effects will occur to views experienced by residents of this local area around Aldeburgh Road, Aldringham Court and Fitches Lane.

29.6.2.2 Potential Effects during Operation – Onshore Substation and National Grid Infrastructure

29.6.2.2.1 Landscape Effects – Onshore Substation and National Grid Infrastructure

163. The main area where changes to the perceived character occur as a result of the operation of the onshore substation and National Grid infrastructure is within a localised area of the Ancient Estate Claylands LCT (01) and Estate Sandlands LCT (07) to the north of Friston, between Grove Road and Fristonmoor. **Significant** effects on the character of the landscape are assessed as occurring within a localised area of approximately 1km around the onshore substation and National Grid substation. The presence of the onshore substation and National Grid substation will result in a large-scale change to the local character of this area of the LCT. The built forms of the onshore substation and National Grid substation will increase the prominence of development components in the landscape, which is already influenced by the presence of the existing overhead line electrical infrastructure, through the introduction of large-scale buildings and introduce complex electrical infrastructure, increasing the influence of existing electrical infrastructure on the character of this area. The principal change to the local character will result from the contrast of the electrical infrastructure and buildings within the onshore substation and National Grid substation within the predominantly agricultural and wooded setting and the scale/complexity of built forms compared to existing development influences within the area.

164. The operation of the onshore substation and National Grid substation will have **not significant** effects on the character or special qualities of the AONB. The onshore substation and National Grid substation are located outside the AONB and its immediate setting, approximately 1.6 km to the north of the AONB at its closest point (where the AONB covers the estuary of the River Alde) and 3.7 km to the west of the edge of the main 'coastal' area of the AONB (near Aldringham (Area A)). The special qualities of the AONB will not be subject to change as a result of the operation of the onshore substation and National Grid substation due the distance of the onshore substation and National Grid substation from the AONB and their limited visibility from within the AONB.

29.6.2.2.2 Visual Effects – Onshore Substation and National Grid Substation

165. The undulating agricultural land and large woodland blocks at Grove Wood and Laurel Covert will provide notable visual containment of the onshore substation and National Grid substation in the landscape. In particular, they entirely screen views of the onshore substation in views from the east (such as from Knodishall/Coldfair Green). In views from areas where the onshore substation and National Grid substation will be visible, Grove Wood and Laurel Covert provide visual containment in terms of the spread of development and vertically, since these woodlands are higher than the onshore substation and National Grid

substation. Despite the notable screening provided in the local landscape, the operation of the onshore substation and National Grid substation are assessed as having **significant** visual effects on residents of parts of Friston, as represented by Viewpoints 1, 2, 4, and 9; people walking on the local public right of way network to the north of Friston (between Friston and Fristonmoor) as represented by Viewpoints 2, 5; residents of scattered rural dwellings near Friston, as represented by Viewpoints 5 and 8; and motorists/cyclists travelling on Grove Road immediately passing the onshore substation and National Grid substation, between Friston and Grove Wood. Photomontage visualisations showing the predicted view of the onshore substation and National Grid substation are shown in ***Figures 29.13 – 29.25***.

166. These **significant** visual effects would all occur within approximately 1.1 km of the onshore substation and National Grid substation, making them localised and they will also occur over the long-term, during a 10 to 15 year period until areas of woodland planted as part of the landscape mitigation plan are expected to provide effective screening. These **significant** visual effects occur where the operational onshore substation and National Grid substation will be visible at relatively close distances, resulting in medium to high changes to views, due to the size, extent and close proximity of the onshore substation and National Grid substation, together with fencing, access road and vehicles during the operational period. During the operational period, the complex built form of the onshore substation and National Grid substation will have a prevailing or notable influence in these views from the local area.

29.6.2.2.3Residual Effects

167. Areas of woodland and hedgerows planted as part of the landscape mitigation plan during the construction phase, described in ***section 29.3.4*** and shown in ***Figure 29.11*** are assumed to have established and will be showing good vigour during the early part of the operational phase, providing progressive screening from an initially limited level of screening when first planted, through partial screening during establishment, to full and effective mitigation screening of the onshore substation and National Grid substation from approximately 15 years post planting. At the point when these areas of woodland planted as part of the landscape mitigation plan provide effective screening, the onshore substation and National Grid substation is still assessed as having **significant**, long-term and permanent effects on the landscape character of the localised area to north of Friston, within approximately 1km around the onshore substation and National Grid substation.

168. The visual effects of the onshore substation and National Grid substation, will however, be effectively mitigated at approximately 15 years post-construction, by the notable screening provided by fully established trees coming into maturity,

which are assumed to be retaining good vigour and starting to achieve good height with tree crowns spreading. The visual effects of the onshore substation and National grid substation, assessed with mitigation at 15 years post-planting, are assessed to becoming **not significant**, long-term and permanent on residents of Friston (Viewpoints 1, 2, 4, and 9); people walking on the local public right of way network to the north of Friston (Viewpoints 2 and 5); and residents of scattered rural dwellings near Friston (Viewpoints 5 and 8); with **significant** visual effects remaining only on motorists/cyclists travelling on Grove Road immediately passing the onshore substation and National Grid substation, and on residents of a limited area of Friston on Aldeburgh Road (Viewpoint 9) and Saxmundham Road (Viewpoint 8). Photomontage visualisations showing the predicted view of the onshore substation and National Grid substation with mitigation planting are shown in ***Figures 29.13 – 29.25***.

169. The potential landscape and visual effects of the onshore substation and National Grid substation during the operational period are assessed in full in ***Appendix 29.2*** and ***29.3*** and summarised in ***Table 29.11.*** Effects are summarised in ***Table 29.11*** without mitigation and residual effects with mitigation (at 15 years post construction), when the landscape mitigation described in ***section 29.3.4*** is predicted to provide effective screening.

Table 29.11 Summary of Potential Effects during Operation – Onshore Substation and National Grid Substation

Receptor	Sensitivity to change	Magnitude of Change (without mitigation)	Significance of Effect (without mitigation)	Magnitude of Change (with mitigation 15 years post construction)	Significance of Effect (with mitigation 15 years post construction)
Landscape Effects					
LCT 01 Ancient Estate Claylands Area A North of Friston, between Grove Road, Fristonmoor and Saxmundham Road	Medium-high	High on localised area to north of Friston within approximately 1.0km around the onshore substation and National Grid substation. Low to negligible over remaining areas of the LCT.	**Significant**, long-term and temporary on localised area to north of Friston within approximately 1.0km around the onshore substation and National Grid substation. **Not significant**, long-term and temporary over remaining areas of LCT.	Medium-high, on localised area to north of Friston within approximately 1.0km around the onshore substation and National Grid substation. Low to negligible over remaining areas of the LCT.	**Significant**, long-term and permanent on localised area to north of Friston within approximately 1.0km around the onshore substation and National Grid substation. **Not significant**, long-term and temporary over remaining areas of LCT.

Receptor	Sensitivity to change	Magnitude of Change (without mitigation)	Significance of Effect (without mitigation)	Magnitude of Change (with mitigation 15 years post construction)	Significance of Effect (with mitigation 15 years post construction)
LCT 01 Ancient Estate Claylands Area B East of Saxmundham	Medium-high	Low	**Not significant**, long-term and temporary	Low	**Not significant**, long-term and permanent
Ancient Estate Claylands LCT (01) Area C East of Grove Wood, Knodishall	Medium-high	Negligible	**Not significant**, long-term and temporary	Negligible	**Not significant**, long-term and permanent
LCT 01 Ancient Estate Claylands Area D Leiston and Theberton	Medium-high	Negligible	**Not significant**, long-term and temporary	Negligible	**Not significant**, long-term and permanent
LCT05 Coastal Dunes and Shingle Ridges	Medium-high	None	**Not significant**, long-term and temporary	None	**Not significant**, long-term and permanent
LCT 06 Coastal Levels Area A Hundred River Valley, south of Aldringham	Medium	None	**Not significant**, long-term and temporary	None	**Not significant**, long-term and permanent
LCT 06 Coastal Levels Area A Former large meare to the south of Thorpeness	Medium	None	**Not significant**, long-term and temporary	None	**Not significant**, long-term and permanent
LCT 06 Coastal Levels Area A Marshes of	Medium	None	**Not significant**, long-term and temporary	None	**Not significant**, long-term and permanent

Receptor	Sensitivity to change	Magnitude of Change (without mitigation)	Significance of Effect (without mitigation)	Magnitude of Change (with mitigation 15 years post construction)	Significance of Effect (with mitigation 15 years post construction)
the Minsmere Level					
LCT 07 Estate Sandlands Area A Thorpeness to Aldringham and Friston	Medium-high	High on localised area to north of Friston within approximately 1.0km around the onshore substation and National Grid substation. Low to negligible over remaining areas of the LCT.	**Significant**, long-term and temporary on localised area to north of Friston within approximately 1.0km around the onshore substation and National Grid substation. **Not significant**, long-term and temporary over remaining areas of LCT.	Medium-high on localised area to north of Friston within approximately 1.0km around the onshore substation and National Grid substation. Low to negligible over remaining areas of the LCT.	**Significant**, long-term and permanent on localised area to north of Friston within approximately 1.0km around the onshore substation and National Grid substation. **Not significant**, long-term and permanent over remaining areas of LCT.
LCT 07 Estate Sandlands Area B Sizewell and north of Leiston to Dunwich Forest	Medium-high	Low	**Not significant**, long-term and temporary	Low	**Not significant**, short-term and permanent
LCT 07 Estate Sandlands Area C Aldeburgh to Snape	Medium-high	Low	**Not significant**, long-term and temporary	Low	**Not significant**, short-term and permanent
Suffolk Coast and Heaths AONB and Heritage Coast Area A: AONB between Thorpeness, Sizewell and Leiston	Medium-high				
Landscape quality		Low	**Not significant**, long-term and temporary	Low	**Not significant**, long-term and permanent

Receptor	Sensitivity to change	Magnitude of Change (without mitigation)	Significance of Effect (without mitigation)	Magnitude of Change (with mitigation 15 years post construction)	Significance of Effect (with mitigation 15 years post construction)
Scenic quality		Low	**Not significant**, long-term and temporary	Low	**Not significant**, long-term and permanent
Relative wildness		Negligible	**Not significant**, long-term and temporary	Negligible	**Not significant**, long-term and permanent
Relative tranquillity		Negligible	**Not significant**, long-term and temporary	Negligible	**Not significant**, long-term and permanent
Natural heritage features		None	**Not significant**, long-term and temporary	None	**Not significant**, long-term and permanent
Cultural heritage		Negligible	**Not significant**, long-term and temporary	Negligible	**Not significant**, long-term and permanent
Suffolk Coast and Heaths AONB and Heritage Coast Area B: Thorpeness, Aldeburgh to Snape	Medium-high				
Landscape quality		Low	**Not significant**, long-term and temporary	Low	**Not significant**, long-term and permanent
Scenic quality		Low	**Not significant**, long-term and temporary	Low	**Not significant**, long-term and permanent
Relative wildness		Negligible	**Not significant**, long-term and temporary	Negligible	**Not significant**, long-term and permanent
Relative tranquillity		Negligible	**Not significant**, long-term and temporary	Negligible	**Not significant**, long-term and permanent
Natural heritage features		None	**Not significant**, long-term and temporary	None	**Not significant**, long-term and permanent
Cultural heritage		Negligible	**Not significant**, long-term and temporary	Negligible	**Not significant**, long-term and permanent

Receptor	Sensitivity to change	Magnitude of Change (without mitigation)	Significance of Effect (without mitigation)	Magnitude of Change (with mitigation 15 years post construction)	Significance of Effect (with mitigation 15 years post construction)
Hundred River Valley SLA	Medium	Negligible	**Not significant**, long-term and temporary	Negligible	**Not significant**, long-term and permanent
Visual Effects					
Viewpoint 1: Public Right of Way near Friston House	Walkers: medium-high Residents: high	High	**Significant**, long-term, temporary	None	**Not significant**, long-term, permanent (note that the woodland planting which will be in the immediate foreground of the view is not shown in Figure 29.13c).
Viewpoint 2: Friston, Church Road	Walkers: medium-high Residents: high	High	**Significant**, long-term, temporary	Low	**Not significant**, long-term, permanent
Viewpoint 3: Grove Road, near Pear Tree Farm	Motorists: medium	Negligible-low	**Not significant**, long-term and temporary	Negligible	**Not significant**, long-term, permanent
Viewpoint 4: Friston, Grove Road	Walkers: medium-high Residents: high Motorists: medium	High	Walkers and residents: **Significant**, long-term, temporary Motorists: **Not significant**, long-term, temporary	Negligible	**Not significant**, long-term, permanent
Viewpoint 5: Public Right of Way, near Moor Farm	Walkers: medium-high Residents: high	High	**Significant**, long-term, temporary	Low	**Not significant**, long-term, permanent
Viewpoint 6: Friston, Village Green	Residents: high	Low	**Not significant**, long-term, temporary	Low	**Not significant**, long-term, permanent

Receptor	Sensitivity to change	Magnitude of Change (without mitigation)	Significance of Effect (without mitigation)	Magnitude of Change (with mitigation 15 years post construction)	Significance of Effect (with mitigation 15 years post construction)
	Motorists: medium-high				
Viewpoint 7: Public Right of Way, east of Friston	Walkers: medium-high	None	**Not significant**, long-term, temporary	None	**Not significant**, long-term, permanent
Viewpoint 8: B1121 Saxmundham Road, north of Friston	Residents: high Motorists: medium	Medium	Residents: **Significant**, long-term, temporary Motorists: **Not significant**, long-term, temporary	Medium-low	Residents: **Significant**, long-term, permanent Motorists: **Not significant**, long-term, permanent
Viewpoint 9: B1121 Aldeburgh Road, south of Friston	Residents: high Motorists: medium	Medium	Residents: **Significant**, long-term, temporary Motorists: **Not significant**, long-term, temporary	Medium	Residents: **Significant**, long-term, permanent Motorists: **Not significant**, long-term, permanent
Viewpoint 10: B1119 Saxmundham Road	Motorists: medium	Low	**Not significant**, long-term, temporary	Negligible	**Not significant**, long-term, permanent
Viewpoint 11: Knodishall Hall	Residents: high	None	**Not significant**, long-term, temporary	None	**Not significant**, long-term, permanent
Viewpoint 12: Knodishall Common	Walkers: medium-high	Negligible	**Not significant**, long-term, temporary	Negligible	**Not significant**, long-term, permanent
Viewpoint 13: B1069 Snape Road	Motorists: medium	None	**Not significant**, long-term, temporary	None	**Not significant**, long-term, permanent
Friston Area A (northern part)	Residents: high	Medium-high to high	**Significant**, long-term, temporary	Negligible	**Not significant**, long-term, permanent
Friston Area B (central part)	Residents: high	Low	**Not significant**, long-term, temporary	Negligible	**Not significant**, long-term, permanent

Receptor	Sensitivity to change	Magnitude of Change (without mitigation)	Significance of Effect (without mitigation)	Magnitude of Change (with mitigation 15 years post construction)	Significance of Effect (with mitigation 15 years post construction)
Friston Area C (Aldeburgh Road)	Residents: high	Medium	**Significant**, long-term, temporary	Medium	**Significant**, long-term, permanent
Friston Area D (southern part)	Residents: high	Low	**Not significant**, long-term, temporary	Negligible	**Not significant**, long-term, permanent
B1121 Aldeburgh / Saxmundham Road Section A Saxmundham to north of Moor Farm (Saxmundham Road)	Motorists: medium	Negligible	**Not significant**, long-term, temporary	Negligible	**Not significant**, long-term, permanent
B1121 Aldeburgh / Saxmundham Road Section B North of Moor Farm to Friston House (Saxmundham Road)	Motorists: medium	Medium	**Not significant**, long-term, temporary	Medium-low	**Not significant**, long-term, permanent
B1121 Aldeburgh / Saxmundham Road: Section C Friston House through Friston (Saxmundham Road)	Motorists: medium	Low	**Not significant**, long-term, temporary	Negligible	**Not significant**, long-term, permanent
B1121 Aldeburgh / Saxmundham Road: Section D South of Friston (Aldeburgh Road)	Motorists: medium	Medium	**Not significant**, long-term, temporary	Medium	**Not significant**, long-term, permanent

Receptor	Sensitivity to change	Magnitude of Change (without mitigation)	Significance of Effect (without mitigation)	Magnitude of Change (with mitigation 15 years post construction)	Significance of Effect (with mitigation 15 years post construction)
Grove Road Section A Saxmundham Road to Grove Wood	Motorists: medium	Low to negligible	**Not significant**, long-term, temporary	Low to negligible	**Not significant**, long-term, permanent
Grove Road Section B Grove Wood (Manor Farm) to northern edge of Friston	Motorists: medium	High	**Significant**, long-term, temporary	Medium-high	**Significant**, long-term, permanent
Grove Road: Section C through Friston	Motorists: medium	Low	**Not significant**, long-term, temporary	Low	**Not significant**, long-term, permanent
Suffolk Coastal Cycle Route: Section A Northern edge of study area to Grove Wood	Cyclists: medium - high	Low to negligible	**Not significant**, long-term, temporary	Low to negligible	**Not significant**, long-term, permanent
Suffolk Coastal Cycle Route: Section B Grove Wood (Manor Farm) to northern edge of Friston	Cyclists: medium - high	High	**Significant**, long-term, temporary	Medium-high	**Significant**, long-term, permanent
Suffolk Coastal Cycle Route: Section C Grove Road through Friston	Cyclists: medium - high	Low	**Not significant**, long-term, temporary	Low	**Not significant**, long-term, permanent
Sandling's Walk: Section A Southern edge of study area at Snape	Medium - high	Low to negligible	**Not significant**, long-term, temporary	Low to negligible	**Not significant**, long-term, permanent

Receptor	Sensitivity to change	Magnitude of Change (without mitigation)	Significance of Effect (without mitigation)	Magnitude of Change (with mitigation 15 years post construction)	Significance of Effect (with mitigation 15 years post construction)
to Friston (Grove Road)					
Sandling's Walk: Section B Friston (Grove Road) to Sloe Lane (Billeaford Hall)	Medium - high	Low	**Not significant**, long-term, temporary	Low	**Not significant**, long-term, permanent
Sandling's Walk: Section C Sloe Lane (Billeaford Hall) to Aldringham Common	Medium - high	Negligible	**Not significant**, long-term, temporary	Negligible	**Not significant**, long-term, permanent
Sandling's Walk: Section D Aldringham Common to Sizewell	Medium - high	Low	**Not significant**, long-term, temporary	Low	**Not significant**, long-term, permanent
Sandling's Walk: Section E Sizewell to northern edge of study area south of East Bridge	Medium - high	Negligible	**Not significant**, long-term, temporary	Negligible	**Not significant**, long-term, permanent

29.6.3 Potential Effects during Decommissioning

170. No decision has been made regarding the final decommissioning policy for the onshore infrastructure as it is recognised that industry best practice, rules and legislation change over time. However, the onshore substation will likely be removed and be reused or recycled. It is expected that the onshore cables will be removed and recycled, with the transition bays and cable ducts (where used) left *in situ*. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. A decommissioning plan will be provided. As such, for the purposes of a worst-case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase.

29.7 Cumulative Effects

171. The East Anglia TWO offshore windfarm project (the proposed East Anglia TWO project) is also at pre-application stage. The proposed East Anglia TWO project will be the subject of a separate DCO application but is working to the same programme of submission as the proposed East Anglia ONE North project. The two projects will share the same landfall and onshore cable route and the onshore substations will be co-located.

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

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

- Scenario 1 - the proposed East Anglia ONE North project and East Anglia ONE North are built simultaneously; and
- Scenario 2 - the proposed East Anglia ONE North project is initially constructed, land is fully reinstated and this is followed by the construction of East Anglia ONE North.

174. The worst case scenario for each impact is then carried through to the wider CIA which considers other developments which are in close proximity to the proposed East Anglia ONE North project.

175. The operational phase cumulative landscape and visual effects will be the same irrespective of the construction scenario and will assess the impact of the operation of the proposed East Anglia ONE North substation, proposed East Anglia TWO substation and National Grid substation. For a more detailed description of the assessment scenarios please refer to ***Chapter 5 EIA Methodology***.

176. The cumulative LVIA focuses on the potential cumulative impacts relating to the onshore substation and National Grid substation. In respect of the East Anglia ONE North landfall and onshore cable route, the relatively small scale of the construction processes involved to implement these components, combined with the limited residual impacts of buried cables during the operational stage, limit the potential for significant cumulative impacts to arise. Full details of the cumulative assessment are provided in ***Appendix 29.4***.

29.7.1 Cumulative Impacts with the Proposed East Anglia TWO Project

29.7.1.1 Cumulative Impacts with East Anglia TWO during Construction

29.7.1.1.1 Assessment Scenarios

177. Details of the worst case assumptions relevant to the cumulative construction scenarios and cumulative operation of the proposed East Anglia ONE North and proposed East Anglia TWO projects are provided in ***Appendix 29.4***.

29.7.1.1.2 Cumulative Impacts during Construction

178. The approach to the assessment of construction stage cumulative landscape and visual effects follows a two-stage process. Firstly, effects from the proposed East Anglia ONE North project alone assessment in ***section 29.6*** are assessed for the potential to have significant cumulative effects with the proposed East Anglia TWO project. Details of this preliminary assessment are included within ***Appendix 29.4.*** The preliminary assessment concluded that the same landscape and visual receptors have potential for significant cumulative impacts under construction Scenario 1 and 2.

179. Secondly, a Technical Assessment of those receptors with potential to undergo significant cumulative impacts is presented in full in ***Appendix 29.4*** and summarised below. The summary of cumulative construction impacts presented in ***Table 29.12*** below shows the effects under scenario 2 only, as the likely worst-case scenario. It should be noted that the magnitude of effects are the same under construction scenario 1 and 2. The only difference being that under scenario 2 the effect is considered long-term for the construction of the onshore substations and National Grid substation; and medium-term for the landfall and onshore cable corridor - due to the duration of construction activities including a gap between each project, whereas under scenario 1 the effect is assessed as short-term.

Table 29.12 Construction Stage Cumulative Effects with East Anglia TWO– Scenario 2

Receptor	Sensitivity to change	Cumulative magnitude of change East Anglia ONE North and East Anglia TWO (without mitigation)	Significance of Cumulative Effect East Anglia ONE North and East Anglia TWO (without mitigation)
Landfall			
Cumulative Landscape Effects - Construction			
LCT07 Estate Sandlands	Medium-high	Medium-high on localised area to the north of Thorpeness within landfall.	**Significant**, medium-term, temporary
Scrub/heathland	High	Medium	**Significant**, medium-term, temporary

Receptor	Sensitivity to change	Cumulative magnitude of change East Anglia ONE North and East Anglia TWO (without mitigation)	Significance of Cumulative Effect East Anglia ONE North and East Anglia TWO (without mitigation)
Suffolk Coast and Heaths AONB (and Heritage Coast) Area A	Medium-high	Medium-high on localised area to the north of Thorpeness within landfall.	**Significant**, medium-term, temporary
Cumulative Visual Effects - Construction			
Thorpeness (residents)	High	High in views from a localised area on the northern and north-western edge of Thorpeness, adjacent to the landfall. Negligible from the majority of the central and southern areas of the settlement.	**Significant**, medium-term and temporary along north and north-west edge of Thorpeness, adjacent to the landfall. **Not significant**, medium-term and temporary from the majority of the central and southern areas of the settlement.
B1353 Thorpeness Road (motorists)	Medium	High from a short (750m) section of the B1353, to the east of Thorpeness, where the landfall is located immediately the north of the road. Negligible from the remainder of the B1353.	**Significant**, medium-term and temporary over a short (750m) section of the B1353, to the east of Thorpeness. **Not significant**, medium-term and temporary over remainder of B1353.
Suffolk Coastal Path (walkers)	High	High over a short (1.0km) section of the route, to the north of Thorpeness, where the route of the path crosses the landfall. Negligible over the remainder of the Suffolk Coastal Path.	**Significant**, medium-term and temporary over a short (1.0km) section of the route, to the north of Thorpeness, where the route of the path crosses the landfall. **Not significant**, medium-term and temporary over the remainder of the Suffolk Coastal Path.
Sandlings Walk (walkers)	Medium - high	High over a short (1km) section of the route, to the north of Thorpeness, where the route of the path crosses the landfall. Negligible over the remainder of the Sandling's Walk.	**Significant**, medium-term and temporary over a short (1.0km) section of the route, to the north of Thorpeness, where the route of the path crosses the landfall. **Not significant**, medium-term and temporary over the remainder of the Sandling's Walk.

Receptor	Sensitivity to change	Cumulative magnitude of change East Anglia ONE North and East Anglia TWO (without mitigation)	Significance of Cumulative Effect East Anglia ONE North and East Anglia TWO (without mitigation)
Onshore Cable Route			
Cumulative Landscape Effects - Construction			
LCT 01 Ancient Estate Claylands Area A North of Friston, between Grove Road, Fristonmoor and Saxmundham Road	Medium-high	Medium on localised area to north of Friston at western end of onshore cable route near the onshore substation and National Grid substation. Low to negligible over remaining areas LCT.	**Significant**, medium-term and temporary on localised area to north of Friston at western end of onshore cable route near the onshore substation and National Grid substation. **Not significant**, medium-term and temporary over remaining areas of LCT.
Ancient Estate Claylands LCT (01) Area 1C East of Grove Wood, Knodishall	Medium-high	Medium	**Significant**, medium-term, temporary
LCT 07 Estate Sandlands Area 7A Thorpeness to Aldringham and Friston	Medium-high	Medium-high within and adjacent to the onshore cable route. Low on the wider character of the Estate Sandlands LCT	**Significant**, medium-term and temporary within and adjacent to the onshore cable route. **Not significant**, medium-term and temporary on the wider character of the Estate Sandlands LCT
Woodland (within Area A)	High	Medium-high	**Significant**, medium-term, temporary
Suffolk Coast and Heaths AONB and Heritage Coast Area A: AONB between Thorpeness, Sizewell and Leiston	High		
Landscape quality		High	**Significant**, medium-term, temporary
Scenic quality		High	**Significant**, medium-term, temporary
Relative wildness		Medium-high	**Significant**, medium-term, temporary

Receptor	Sensitivity to change	Cumulative magnitude of change East Anglia ONE North and East Anglia TWO (without mitigation)	Significance of Cumulative Effect East Anglia ONE North and East Anglia TWO (without mitigation)
Relative tranquillity		Medium	**Significant**, medium-term, temporary
Natural heritage features		Medium	**Significant**, medium-term, temporary
Cultural heritage		Low	**Not significant**, medium-term, temporary
Suffolk Coast and Heaths AONB and Heritage Coast Area B: AONB between Thorpeness, Aldeburgh and Snape	Medium-high		
Landscape quality		Low	**Not significant**, medium-term, temporary
Scenic quality		Low	**Not significant**, medium-term, temporary
Relative wildness		Low	**Not significant**, medium-term, temporary
Relative tranquillity		Low	**Not significant**, medium-term, temporary
Natural heritage features		Low	**Not significant**, medium-term, temporary
Cultural heritage		Low	**Not significant**, medium-term, temporary
Hundred River Valley SLA Area A: Hundred River Valley, south of Aldringham	Medium	Medium-high over a local area at Raidsend, due to the felling of mature woodland	**Significant**, medium-term, temporary
Cumulative Visual Effects - Construction			
Aldringham (residents)	High	High where it crosses the Hundred River and Aldeburgh Road, where the construction of the onshore cable route will be visible in views from nearby dwellings and felling of a notable area of mature woodland at Raisdend is required.	**Significant**, medium-term and temporary along Aldeburgh Road **Not significant**, medium-term, temporary

Receptor	Sensitivity to change	Cumulative magnitude of change East Anglia ONE North and East Anglia TWO (without mitigation)	Significance of Cumulative Effect East Anglia ONE North and East Anglia TWO (without mitigation)
		Low on its route to the east of the settlement crossing the B1353 Thorpeness Road	
Coldfair Green (residents)	High	High in views from a localised area on the southern edge of the settlement. Negligible from the majority of the settlement where there will be no direct views of the onshore infrastructure.	**Significant**, medium-term and temporary on south edge of Coldfair Green. **Not significant**, medium-term, temporary from the majority of the settlement.
Friston (residents)	High	Medium to high from localised area on the northern edges of Friston. Negligible from the majority of central and southern areas of Friston.	**Significant**, medium-term, temporary from the northern edges of Friston. **Not significant**, medium-term, temporary from the majority of central and southern areas of Friston.
B1353 Thorpeness Road (motorists)	Medium	High over a short section of the B1353 to the east of Aldringham where the onshore cable route crosses the B1353. Negligible over the remainder of the B1353.	**Significant**, medium-term, temporary over approx. 500m section east of Aldringham. **Not significant**, short-term and temporary over remainder of B1353.
B1122 Aldeburgh Road (motorists)	Medium	High over a short section of the B1122, to the south of Aldringham, where the onshore cable route crosses the B1122. Negligible over the remainder of the B1122.	**Significant**, medium-term, temporary over a short 300m section of the B1122, to the south of Aldringham, where the onshore cable route crosses the B1122. **Not significant**, medium-term, temporary over the remainder of the B1122.
B1069 Snape Road (motorists)	Medium	High over a short section of the B1069, to the south of Coldfair Green, where the onshore cable route crosses the B1069. Negligible over the remainder of the B1069.	**Significant**, medium-term, temporary over a short 500m section of the B1069, to the south of Coldfair Green, where the onshore cable route crosses the B1069. **Not significant**, medium-term, temporary over the remainder of the B1069.

Receptor	Sensitivity to change	Cumulative magnitude of change East Anglia ONE North and East Anglia TWO (without mitigation)	Significance of Cumulative Effect East Anglia ONE North and East Anglia TWO (without mitigation)
Suffolk Coastal Path (walkers)	High	High over a short 1.5km section of the route to the north of Thorpeness, where the onshore cable route crosses or is adjacent to the Suffolk Coastal Path. Negligible over the remainder of the Suffolk Coastal Path.	**Significant**, medium-term, temporary over a short 1.5km section of the route to the north of Thorpeness, where the onshore cable route crosses or is adjacent to the Suffolk Coastal Path **Not significant**, medium-term, temporary over the remainder of the Suffolk Coastal Path.
Sandlings Walk (walkers)	Medium - high	High over two sections of the route: from the edge of Friston to Great Wood for approximately 3.5km where the route runs parallel to and subsequently crosses the onshore cable route; and from the edge of Aldringham Common to Sizewell for approximately 2.0km where the route crosses through and then runs parallel to the onshore cable route. Negligible for the remainder of the route of the Sandling's Walk.	**Significant**, medium-term and temporary over approx. 3.5km section north-east of Friston and approx. 2km section south of Sizewell. **Not significant**, medium-term, temporary for the remainder of the route.
Suffolk Coastal Cycle Route (cyclists)	Medium - high	High over a short 1km section of the route, along Grove Road between Friston and Grove Wood, where the onshore cable route crosses or is adjacent to the route of Suffolk Coastal Cycle Route. Negligible for the remainder of the route of the Suffolk Coastal Cycle Route.	**Significant**, medium-term and temporary over approx. 1km section on Grove Road between Friston and Grove Wood. **Not significant**, medium-term, temporary for the remainder of the route.
Onshore Substation and National Grid Infrastructure			
Cumulative Landscape Effects - Construction			
LCT 01 Ancient Estate Claylands Area 1A North of Friston, between Grove Road,	Medium-high	High on localised area to north of Friston within approximately 1.0km around the onshore substation and National Grid substation.	**Significant**, medium-term and temporary on localised area to north of Friston within approximately 1.0km around the onshore

Receptor	Sensitivity to change	Cumulative magnitude of change East Anglia ONE North and East Anglia TWO (without mitigation)	Significance of Cumulative Effect East Anglia ONE North and East Anglia TWO (without mitigation)
Fristonmoor and Saxmundham Road		Low to negligible over remaining areas of the LCT.	substation and National Grid substation. **Not significant**, medium-term and temporary over remaining areas of LCT.
LCT 07 Estate Sandlands Area 7A Thorpeness to Aldringham and Friston	Medium-high	High on localised area to north of Friston within approximately 1.0km around the onshore substation and National Grid substation. Low to negligible over remaining areas of the LCT.	**Significant**, medium-term and temporary on localised area to north of Friston within approximately 1.0km around the onshore substation and National Grid substation. **Not significant**, medium-term and temporary over remaining areas of LCT.
Woodland (within Area 7A)	High	Medium-high due to the combined impact of felling small area of Laurel Covert woodland at the edge of East TWO onshore substation and stand of vegetation within East Anglia ONE North onshore substation	**Not significant**, medium-term, temporary
Cumulative Visual Effects - Construction			
Viewpoint 1: Public Right of Way near Friston House	Walkers: medium-high Residents: high	High	**Significant**, medium-term, temporary
Viewpoint 2: Friston, Church Road	Walkers: medium-high Residents: high	High	**Significant**, medium-term, temporary
Viewpoint 4: Friston, Grove Road	Walkers: medium-high Residents: high Motorists: medium	High	Walkers and residents: **Significant**, medium-term, temporary Motorists: **Significant**, medium-term, temporary

Receptor	Sensitivity to change	Cumulative magnitude of change East Anglia ONE North and East Anglia TWO (without mitigation)	Significance of Cumulative Effect East Anglia ONE North and East Anglia TWO (without mitigation)
Viewpoint 5: Public Right of Way, near Moor Farm	Walkers: medium-high Residents: high	High	**Significant**, medium-term, temporary
Viewpoint 8: B1121 Saxmundham Road, north of Friston	Residents: high Motorists: medium	Medium-high	Residents: **Significant**, medium-term, temporary Motorists: **Significant**, long-term, temporary
Viewpoint 9: B1121 Aldeburgh Road, south of Friston	Residents: high Motorists: medium	Medium	Residents: **Significant**, medium-term, temporary Motorists: **Not significant**, medium-term, temporary
Friston Area A (northern part)	Residents: high	High	**Significant**, medium-term, temporary
Friston Area B (central part)	Residents: high	Low	**Not significant**, medium-term, temporary
Friston Area C (Aldeburgh Road)	Residents: high	Medium	**Significant**, medium-term, temporary
Friston Area D (southern part)	Residents: high	Low	**Not significant**, medium-term, temporary
B1121 Aldeburgh / Saxmundham Road Section B North of Moor Farm to Friston House (Saxmundham Road)	Motorists: medium	Medium-high	**Significant**, medium-term, temporary
Grove Road Section B Grove Wood (Manor Farm) to northern edge of Friston	Motorists: medium	High	**Significant**, medium-term, temporary
Suffolk Coastal Cycle Route: Section B Grove Wood (Manor Farm) to northern edge of Friston	Cyclists: medium - high	High	**Significant**, medium-term, temporary

29.7.1.2 Cumulative Effects with East Anglia TWO during Operation

29.7.1.2.1 Cumulative Effects during Operation

180. The approach to the assessment of cumulative landscape and visual effects during operation follows a two-stage process. Firstly, effects from project alone assessment in ***section 29.6*** are assessed for the potential to have significant cumulative effects with the proposed East Anglia TWO project. Details of this preliminary assessment are included within ***Appendix 29.4.*** Secondly, a Technical Assessment of those receptors with potential to undergo significant cumulative impacts is presented in full in ***Appendix 29.4*** and summarised below.

181. The potential cumulative effects during operation would occur in relation to the presence of East Anglia ONE North and East Anglia TWO onshore substations and National Grid infrastructure. The assessment considers potential cumulative effects on the landscape character and visual amenity of the site and surrounding area, taking into account the maturing of mitigation planting during the operational phase.

Table 29.13 Operational Cumulative Effects with the proposed East Anglia TWO project

Receptor	Sensitivity to change	Magnitude of Change (without mitigation)	Significance of Effect (without mitigation)	Magnitude of Change (with mitigation 15 years post construction)	Significance of Effect (with mitigation 15 years post construction)
Onshore Cable Route					
Cumulative Landscape Effects - Operation					
LCT 07 Estate Sandlands Area A Thorpeness to Aldringham and Friston	Medium-high	Medium-high within a local area of the LCT at Raidsend, due to the felling of mature woodland. Low/negligible over the remainder of this area of the LCT.	Significant, long-term, permanent within a local area of the LCT at Raidsend, due to the felling of mature woodland. Not significant, long-term, permanent over the remainder of this area of the LCT.	Medium-high within a local area of the LCT at Raidsend, due to the felling of mature woodland. Low/negligible over the remainder of this area of the LCT.	Significant, long-term, permanent within a local area of the LCT at Raidsend, due to the felling of mature woodland. Not significant, long-term, permanent over the remainder of this area of the LCT.
Woodland (within Area A)	High	Medium-high due to felling of mature woodland at Raidsend.	Significant, long-term, permanent due to felling of mature	Medium-high due to felling of mature woodland at Raidsend.	Significant, long-term, permanent due to felling of mature

Receptor	Sensitivity to change	Magnitude of Change (without mitigation)	Significance of Effect (without mitigation)	Magnitude of Change (with mitigation 15 years post construction)	Significance of Effect (with mitigation 15 years post construction)
			woodland at Raidsend.		woodland at Raidsend.
Hundred River Valley SLA Area A: Hundred River Valley, south of Aldringham	Medium	Medium-high within a local area at Raidsend, due to the felling of mature woodland. Low/negligible over the remainder of the SLA.	Significant, long-term, permanent within a local area of the SLA at Raidsend, due to the felling of mature woodland. Not significant, long-term, permanent over the remainder of the SLA.	Medium-high within a local area at Raidsend, due to the felling of mature woodland. Low/negligible over the remainder of the SLA.	Significant, long-term, permanent within a local area of the SLA at Raidsend, due to the felling of mature woodland. Not significant, long-term, permanent over the remainder of the SLA.
Onshore Substations and National Grid Infrastructure					
Cumulative Landscape Effects - Operation					
LCT 01 Ancient Estate Claylands Area A North of Friston, between Grove Road, Fristonmoor and Saxmundham Road	Medium-high	High on localised area to north of Friston within approximately 1.0km around the onshore substation and National Grid substation. Low to negligible over remaining areas of the LCT.	**Significant**, long-term and temporary on localised area to north of Friston within approximately 1.0km around the onshore substation and National Grid substation. **Not significant**, long-term and temporary over remaining areas of LCT.	Medium-high, on localised area to north of Friston within approximately 1.0km around the onshore substation and National Grid substation. Low to negligible over remaining areas of the LCT.	**Significant**, long-term and permanent on localised area to north of Friston within approximately 1.0km around the onshore substation and National Grid substation. **Not significant**, long-term and temporary over remaining areas of LCT.
LCT 07 Estate Sandlands Area A Thorpeness to Aldringham and Friston	Medium-high	High on localised area to north of Friston within approximately 1.0km around the onshore substation and	**Significant**, long-term and temporary on localised area to north of Friston within approximately 1.0km around the onshore	Medium-high on localised area to north of Friston within approximately 1.0km around the onshore substation and	**Significant**, long-term and permanent on localised area to north of Friston within approximately 1.0km around the onshore

Receptor	Sensitivity to change	Magnitude of Change (without mitigation)	Significance of Effect (without mitigation)	Magnitude of Change (with mitigation 15 years post construction)	Significance of Effect (with mitigation 15 years post construction)
		National Grid substation. Low to negligible over remaining areas of the LCT.	substation and National Grid substation. **Not significant**, long-term and temporary over remaining areas of LCT.	National Grid substation. Low to negligible over remaining areas of the LCT.	substation and National Grid substation. **Not significant**, long-term and permanent over remaining areas of LCT.
Cumulative Visual Effects					
Viewpoint 1: Public Right of Way near Friston House	Walkers: medium-high Residents: high	High	**Significant**, long-term, temporary	None	**Not significant**, long-term, permanent
Viewpoint 2: Friston, Church Road	Walkers: medium-high Residents: high	High	**Significant**, long-term, temporary	Low	**Not significant**, long-term, permanent
Viewpoint 4: Friston, Grove Road	Walkers: medium-high Residents: high Motorists: medium	High	Walkers and residents: **Significant**, long-term, temporary Motorists: **Significant**, long-term, temporary	Negligible	**Not significant**, long-term, permanent
Viewpoint 5: Public Right of Way, near Moor Farm	Walkers: medium-high Residents: high	High	**Significant**, long-term, temporary	Low	**Not significant**, long-term, permanent
Viewpoint 8: B1121 Saxmundham Road, north of Friston	Residents: high Motorists: medium	Medium-high	Residents: **Significant**, long-term, temporary Motorists: **Significant**, long-term, temporary	Medium	Residents: **Significant**, long-term, permanent Motorists: **Not significant**, long-term, permanent

Receptor	Sensitivity to change	Magnitude of Change (without mitigation)	Significance of Effect (without mitigation)	Magnitude of Change (with mitigation 15 years post construction)	Significance of Effect (with mitigation 15 years post construction)
Viewpoint 9: B1121 Aldeburgh Road, south of Friston	Residents: high Motorists: medium	Medium	Residents: **Significant**, long-term, temporary Motorists: **Not significant**, long-term, temporary	Medium	Residents: **Significant**, long-term, permanent Motorists: **Not significant**, long-term, permanent
Friston Area A (northern part)	Residents: high	High	**Significant**, long-term, temporary	Low	**Not significant**, long-term, permanent
Friston Area B (central part)	Residents: high	Low	**Not significant**, long-term, temporary	Negligible	**Not significant**, long-term, permanent
Friston Area C (Aldeburgh Road)	Residents: high	Medium	**Significant**, long-term, temporary.	Medium	**Significant**, long-term, permanent
Friston Area D (southern part)	Residents: high	Low	**Not significant**, long-term, temporary	Negligible	**Not significant**, long-term, permanent
Grove Road Section B Grove Wood (Manor Farm) to northern edge of Friston	Motorists: medium	High	**Significant**, long-term, temporary	Medium-high	**Significant**, long-term, permanent
Suffolk Coastal Cycle Route: Section B Grove Wood (Manor Farm) to northern edge of Friston	Cyclists: medium - high	High	**Significant**, long-term, temporary	Medium-high	**Significant**, long-term, permanent

29.7.1.2.2 Cumulative Effects during Operation – Onshore Cable Route

29.7.1.2.2.1 Cumulative Landscape Effects – Onshore Cable Route

182. The largest physical loss of mature woodland as a result of the onshore cable route occurs at Raidsend, on land to the south of Aldringham Court. At this

location, the onshore cable route is routed across the woodland to the south of Aldringham Court Nursing Home as this is the only identified location where the cable route can cross Aldeburgh Road (***section 4.5.5.7***). The Applicant has committed to reducing the cable swathe to 27.1m for East Anglia ONE North and East Anglia TWO, to retain as many trees as possible at this location. The physical effect of the onshore cable route arising due to the physical loss of this landscape element, the mature woodland at Raidsend, is assessed as **significant**, long-term and permanent. The change to the perceived character in the vicinity of this woodland, within a localised area of the Estate Sandlands LCT and the Hundred River Valley SLA, is also assessed as being **significant**, long-term and permanent due the physical loss of this woodland landscape element and the enclosure and character it provides at a local level, as part of the local landscape character of the LCT/SLA. The changes to the setting of the AONB during the operational period, as a result of the felling of mature woodland to facilitate the crossing of Aldeburgh Road, are assessed as **not significant**.

183. The significant operational effects of the onshore cable route on the woodland landscape element and local landscape character cannot be avoided or fully mitigated by re-instatement, as the onshore cable route cannot be re-planted with woodland, since it requires to be kept clear of woodland vegetation during the operational period over the long-term. Land at Raidsend will be reinstated, potentially by establishing heathland over the onshore cables, with the potential for woodland to be retained or further established along the outer edges of the onshore cable corridor, outside a minimum offset distance from the onshore cable route. The landscape and ecological mitigation proposals for this area at the Aldeburgh Road crossing will be presented within the OLEMS submitted with the DCO application.

29.7.1.2.2.2 Cumulative Visual Effects – Onshore Cable Route

184. The loss of mature woodland as a result of the onshore cable route at Raidsend, to the south of Aldringham Court, will also give rise to visual effects where people experience changes in views that are currently influenced by this woodland in the baseline.

185. The felling of this area of mature woodland at Raidsend to allow for the construction of the onshore cable route will be visible in views along the B1122 Aldeburgh Road and will change the visual amenity experienced from the road, creating more open views from this section, which is currently enclosed on either side by mature woodland. **Significant**, long-term and permanent effects will occur to views experienced by motorists from a short section of the B1122 to the south of Aldringham where the onshore cable route crosses the road and mature woodland at Raidsend.

186. The visual amenity experienced by residents of the local area around Aldeburgh Road and Fitches Lane is also likely to be changed, resulting in more open views on either side of the road (which are currently contained by the woodland) and potential changes to views in the area near Aldringham Court. **Significant**, long-term and permanent effects will occur to views experienced by residents of this local area around Aldeburgh Road, Aldringham Court and Fitches Lane.

29.7.1.3 Cumulative Effects during Decommissioning with East Anglia TWO

187. Decommissioning of the proposed East Anglia ONE North project may potentially take place at the same time as the proposed East Anglia TWO project. The detail and scope of the decommissioning works for the proposed East Anglia ONE North project will be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. A decommissioning plan will be provided. As such, cumulative effects during the decommissioning stage are assumed to be no worse than those identified during the construction stage.

29.7.2 Cumulative Effects with Other Developments

188. Following a review of projects which have the potential to overlap temporally or spatially with the proposed East Anglia ONE North project, one development has been scoped into the CIA. ***Table 29.14*** provides detail regarding the project.

189. The full list of projects for consideration will be updated following PEIR and agreed in consultation with the LVIA ETG. The remainder of the section details the nature of the cumulative effects against all those receptors scoped in for cumulative assessment.

Table 29.14 Summary of Projects Considered for the CIA in Relation to LVIA

Project	Status	Development period	[1]Distance from East Anglia ONE North proposed onshore development area (km)	Project definition	Project data status	Included in CIA	Rationale
Sizewell C New Nuclear Power Station	Scoping Opinion Adopted by SoS on 02.06.2014	Uncertain	0.49km	Full Scoping Report Available: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-000103-Sizewell%20C%20EIA%20Scoping%20Report_Main%20text.pdf	Tier 5[2]	Yes	Potential overlap of construction and operational phases

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

29.7.2.1.1 Cumulative Effects with Sizewell C during Construction

190. Landscape and visual effects from the proposed East Anglia ONE North project alone assessment in ***section 29.6*** are assessed for the potential to have significant cumulative effects with the proposed East Anglia TWO project and Sizewell C New Nuclear Power Station. Details of this preliminary assessment are included within ***Appendix 29.4.*** Secondly, a Technical Assessment of those receptors with potential to undergo significant cumulative impacts is presented in full in ***Appendix 29.4*** and summarised below in ***Table 29.15*** and ***Table 29.16***.

29.7.2.1.2 Cumulative Effects with Sizewell C during Construction

191. ***Table 29.15*** shows the construction stage cumulative effects with the Sizewell C New Nuclear Power Station project.

Table 29.15 Construction Stage Cumulative Effects with Sizewell C – Summary Assessment

Receptor	Sensitivity to change	Cumulative magnitude of change with Sizewell C (without mitigation)	Significance of Cumulative Effect with Sizewell C (without mitigation)
Landfall			
Cumulative Landscape Effects			
LCT07 Estate Sandlands	Medium-high	Low due to the distance between the landfall and Sizewell C, their visual separation by large areas of Sandlings Forest and coastline, and the relatively small scale of the construction works/footprint of the landfall.	**Not significant**, medium-term and temporary
Suffolk Coast and Heaths AONB (and Heritage Coast)	Medium-high	Low due to the distance between the landfall and Sizewell C, their visual separation by large areas of Sandlings Forest and coastline, and the relatively small scale of the construction works/footprint of the landfall.	**Not significant**, medium-term and temporary
Cumulative Visual Effects			
Suffolk Coastal Path (walkers)	Medium-high	High sequential change to views experienced over a 1km section of the route, to the north of Thorpeness and over a 5km section of the route between Sizewell and Dunwich Heath.	**Significant**, medium-term and temporary sequential effect to views experienced over a 1km section of the route, to the north of Thorpeness, and over a 5km section of the route

Receptor	Sensitivity to change	Cumulative magnitude of change with Sizewell C (without mitigation)	Significance of Cumulative Effect with Sizewell C (without mitigation)
		Low over the remainder of the Suffolk Coastal Path.	between Sizewell and Dunwich Heath. Not significant, medium-term and temporary over the remainder of the Suffolk Coastal Path.
Sandlings Walk (walkers)	Medium-high	High sequential change to views experienced over a 1.0km section of the route, to the north of Thorpeness, and over a 6km section of the route between Sizewell, Minsmere Haven, Leiston Abbey and Eastbridge. Low over the remainder of the Sandling's Walk.	**Significant**, medium-term and temporary sequential effect to views experienced over a 1km section of the route, to the north of Thorpeness, and over a 6km section of the route between Sizewell, Minsmere Haven, Leiston Abbey and Eastbridge. Not significant, medium-term and temporary over the remainder of the Sandling's Walk.
Onshore cable route			
Cumulative Landscape Effects			
LCT 07 Estate Sandlands Area A Thorpeness to Aldringham and Friston	Medium-high	High on the character of the Estate Sandlands LCT between Thorpeness, Sizewell, Leiston and Aldringham. Low change to the landscape character to the west of Aldringham.	**Significant**, medium-term and temporary on the character of the Estate Sandlands LCT between Thorpeness, Sizewell, Leiston and Aldringham. **Not significant**, medium-term and temporary change to the landscape character to the west of Aldringham.
LCT 07 Estate Sandlands Area B Sizewell and north of Leiston to Dunwich Forest	Medium	High on the character of the Estate Sandlands LCT in the area between Sizewell Power station, Dunwich Forest and Leiston.	**Significant**, medium-term and temporary on the character of the Estate Sandlands LCT in the area between Sizewell Power station, Dunwich Forest and Leiston.
Suffolk Coast and Heaths AONB (and Heritage Coast) Area A: Sizewell and Dunwich Forest	High	High on the character and special qualities of the Suffolk Coast and Heaths AONB between Thorpeness, Sizewell, Leiston and Aldringham.	**Significant**, medium-term and temporary on the character and special qualities of the AONB between Thorpeness,

Receptor	Sensitivity to change	Cumulative magnitude of change with Sizewell C (without mitigation)	Significance of Cumulative Effect with Sizewell C (without mitigation)
		Low change to the landscape character to the west of Aldringham.	Sizewell, Leiston and Aldringham. **Not significant**, medium-term and temporary change to the landscape character to the west of Aldringham.
Suffolk Coast and Heaths AONB (and Heritage Coast) Area C: Sizewell and Dunwich Forest	Medium	High on the character and special qualities of the AONB in the area between Sizewell Power station, Dunwich Forest and Leiston.	**Significant**, medium-term and temporary on the character and special qualities of the AONB Sizewell Power station, Dunwich Forest and Leiston.
Cumulative Visual Effects			
Leiston (residents)	High	Negligible from the majority of the settlement. Low from localised areas along the eastern edges of Leiston.	**Not significant**, medium-term, temporary.
B1122 Aldeburgh Road (motorists)	Medium	Medium, sequential change due to views of the onshore cable corridor construction over a short section of the B1122 to the south of Aldringham and views of the Sizewell C construction area over a 1.5km section of the B1122 between Leiston and Theberton. Low/negligible over the remainder of the B1122.	**Not significant**, medium-term and temporary sequential effect due to views of the onshore cable corridor construction over a short section of the B1122 to the south of Aldringham and over a 1.5km section of the B1122 between Leiston and Theberton.
Suffolk Coastal Path (walkers)	Medium-high	High sequential change to views experienced over a 1.5km section of the route to the north of Thorpeness and over a 5km section of the route between Sizewell and Dunwich Heath. Low over the remainder of the Suffolk Coastal Path.	**Significant**, medium-term and temporary sequential effect to views experienced over a 1.5km section of the route to the north of Thorpeness and over a 5km section of the route between Sizewell and Dunwich Heath. **Not significant**, medium-term and temporary over the remainder of the Suffolk Coastal Path.

Receptor	Sensitivity to change	Cumulative magnitude of change with Sizewell C (without mitigation)	Significance of Cumulative Effect with Sizewell C (without mitigation)
Sandlings Walk (walkers)	Medium-high	High sequential change to views experienced due to visibility over three sections of the route: from the edge of Friston to Great Wood for approximately 3.5km; from the edge of Aldringham Common to Sizewell for approximately 2.0km; and over a 6km section of the route between Sizewell, Minsmere Haven, Leiston Abbey and Eastbridge. Low over the remainder of the Sandling's Walk.	**Significant**, medium-term and temporary sequential effect to views experienced over three sections of the route: from the edge of Friston to Great Wood for approximately 3.5km; from the edge of Aldringham Common to Sizewell for approximately 2.0km; and over a 6km section of the route between Sizewell, Minsmere Haven, Leiston Abbey and Eastbridge. **Not significant**, medium-term and temporary over the remainder of the Sandling's Walk.
Suffolk Coastal Cycle Route (cyclists)	Medium-high	High sequential change to views experienced over two sections of the route: a short 1km section of the route, along Grove Road between Friston and Grove Wood; and from a 2.5km section between Leitson Abbey and Eastbridge. Low over the remainder of the Suffolk Coastal Cycle Route.	**Significant**, medium-term and temporary sequential effect to views experienced over two sections of the route: a short 1km section of the route, along Grove Road between Friston and Grove Wood; and from a 2.5km section between Leiston Abbey and Eastbridge. **Not significant**, medium-term and temporary over the remainder of the Suffolk Coastal Cycle Route.
Onshore Substations and National Grid Substation			
Cumulative Landscape Effects			
LCT 07 Estate Sandlands Area A Thorpeness to Aldringham and Friston	Medium-high	Low due to the long distance between the onshore substation/National Grid substation and Sizewell C, their visual separation by areas of woodland/urban development, and the very different geographic areas of the LCT that may be influenced by each.	**Not significant**, medium-term and temporary.

Receptor	Sensitivity to change	Cumulative magnitude of change with Sizewell C (without mitigation)	Significance of Cumulative Effect with Sizewell C (without mitigation)
LCT 07 Estate Sandlands Area B Sizewell and north of Leiston to Dunwhich Forest	Medium	Low due to the long distance between the onshore substation/National Grid substation and Sizewell C, their visual separation by areas of woodland/urban development, and the very different geographic areas of the LCT that may be influenced by each.	**Not significant**, medium-term and temporary.

29.7.2.1.3Cumulative Effects with Sizewell C during Operation

192. ***Table 29.16*** shows the operational stage cumulative effects with the Sizewell C New Nuclear Power Station project.

Table 29.16 Operational Stage Cumulative Impacts with Sizewell C – Summary Assessment

Receptor	Sensitivity to change	Cumulative magnitude of change with Sizewell C (without mitigation)	Significance of Cumulative Effect with Sizewell C (without mitigation)	Cumulative magnitude of change with Sizewell C (15 years post construction with mitigation)	Significance of Cumulative Effect with Sizewell C (15 years post construction with mitigation)
Onshore Substations and National Grid Substation					
Cumulative Landscape Effects					
LCT 07 Estate Sandlands Area A Thorpeness to Aldringham and Friston	Medium-high	Low	**Not significant**, long-term and temporary	Low	**Not significant**, long-term and permanent
LCT 07 Estate Sandlands Area B Sizewell and north of Leiston to Dunwhich Forest	Medium	Low	**Not significant**, long-term and temporary	Low	**Not significant**, long-term and permanent

29.8 Inter-relationships

193. Inter-relationships are considered to be the effects and associated effects of different aspects of the proposed East Anglia ONE North project on the same receptor. In the LVIA, these inter-related effects are considered to be receptor led effects, where specific receptors may be affected by both the proposed East Anglia ONE North offshore development area (including windfarm site, offshore platforms, offshore export cable corridor) and the onshore infrastructure (i.e. onshore substation, onshore export cable corridor, landfall). There is potential for effects to interact, spatially and temporally, to create inter-related effects on a receptor.

194. An assessment of inter-related effects has been undertaken in ***section 28.11*** of ***Chapter 28 Seascape, Landscape and Visual Impact Assessment*** to assess any areas where the proposed East Anglia ONE North offshore development area and onshore infrastructure combine, or inter-relate, to have an effect, for example visibility of the proposed East Anglia ONE North offshore development area and the proposed onshore substation or cable landfall from a particular viewpoint, may interact to produce a different, or greater effect on a receptor than when the effects are considered in isolation. The combined effects of the proposed East Anglia ONE North offshore development area and onshore infrastructure on the character of the Suffolk Coast and Heaths AONB are assessed in ***section 28.11*** of ***Chapter 28 Seascape, Landscape and Visual Impact Assessment***. Receptor-led effects might be short-term, temporary or transient effects, or incorporate longer term effects.

195. A description of the likely inter-related effects arising from the proposed East Anglia ONE North project is provided in ***section 28.11 of Chapter 28 Seascape, Landscape and Visual Impact Assessment.***

196. ***Table 29.17*** lists out the other inter-relationships between this chapter and other chapters within the ES.

Table 29.17 Chapter Topic Inter-relationships

Inter-relationship all Phases and Linked Chapter	Section where Addressed	Rationale
Chapter 22 Onshore Ecology	***Section 29.6*** (all impacts) and ***Appendix 29.2*** (Landscape Assessment) ***Section 29.3.3*** (embedded mitigation) and	Both chapters consider the potential effects of hedgerow and tree removals, the LVIA considering the impact on hedgerows and trees as landscape elements, and the Onshore Ecology assessment considering the impact on hedgerows and trees as important ecological assets. Both chapters consider the mitigation of hedgerow and tree loss in respect of proposals to replant. The future OLEMS will

Inter-relationship all Phases and Linked Chapter	Section where Addressed	Rationale
	section 29.3.4 (landscape mitigation)	set out the approach to replanting and the LVIA assesses the mitigation of landscape and visual effects.
Chapter 24 Archaeology and Cultural Heritage	***Section 29.6*** (all impacts) ***Appendix 29.2*** (Landscape Assessment) and ***29.3*** (Visual Assessment)	Both chapters consider the potential effects of the proposed East Anglia ONE North project on designated Registered Parks and Gardens and their setting within the landscape.
Chapter 30 Tourism, Recreation and Socio-Economics	***Section 29.6*** (all impacts). ***Appendix 29.3*** (Visual Assessment)	Both chapters consider the potential effects of the onshore substation, National Grid substation and onshore cable route on the visual amenity of recreational users in the local area.

29.9 Interactions

197. The effects identified and assessed in this chapter have the potential to interact with each other, which could give rise to synergistic impacts as a result of that interaction. For clarity, the areas of interaction between effects are presented in ***Table 29.18***, along with an indication as to whether the interaction may give rise to synergistic effects.

Table 29.18 Interaction between Effects

Potential Interactions between Impacts				
Construction	**1 Changes to landscape elements**	**2 Changes to landscape character**	**3 Changes to landscape designations**	**4 Changes to visual amenity**
1 Changes to landscape elements	-	Yes	Yes	Yes
2 Changes to landscape character	Yes	-	Yes	Yes
3 Changes to landscape designations	Yes	Yes	-	Yes
4 Changes to visual amenity	Yes	Yes	Yes	-

Potential Interactions between Impacts				
Operation	**1 Changes to landscape elements**	**2 Changes to landscape character**	**3 Changes to landscape designations**	**4 Changes to visual amenity**
1 Changes to landscape elements	-	Yes	Yes	Yes
2 Changes to landscape character	Yes	-	Yes	Yes
3 Changes to landscape designations	Yes	Yes	-	Yes
4 Changes to visual amenity	Yes	Yes	Yes	-

29.10 Summary

198. A signposting of the findings of the PEIR for LVIA, referring to tables within this chapter, is presented in ***Table 29.19***.

Table 29.19 Summary of Potential Effects Identified for LVIA

Potential Effect	Signpost	Summary of Examples of Potential Mitigation Measures
Construction		
Landfall		
Effects on landscape character	See ***Table 29.8***.	Reinstatement of ground and landscape elements at transition bay and HDD compound at the end of construction phase.
Effects on landscape elements	See ***Table 29.8***.	Reinstatement of landscape elements at end of construction phase**.**
Visual effects	See ***Table 29.8***.	Reinstatement of ground and landscape elements at transition bay and HDD compound at the end of construction phase.
Onshore Cable Corridor		
Effects on landscape character	See ***Table 29.9***.	Reinstatement of ground and landscape elements within onshore cable corridor at the end of construction phase.
		Establishment of heathland habitat and partial reinstatement of woodland at Raidsend at the end of construction phase.
Effects on special qualities	See ***Table 29.9***.	Reinstatement of ground and landscape elements within onshore cable corridor at the end of construction phase.
Effects on landscape elements	See ***Table 29.9***.	Establishment of heathland habitat and partial reinstatement of woodland at Raidsend at the end of construction phase.
Visual effects	See ***Table 29.9***.	Reinstatement of ground and landscape elements within onshore cable corridor at the end of construction phase.
Onshore Substation and National Grid Substation		
Effects on landscape character	See ***Table 29.10***.	Landscape mitigation plan (***Figure 29.11***) (***section 29.3.4***).

Potential Effect	Signpost	Summary of Examples of Potential Mitigation Measures
Visual effects	See ***Table 29.10***.	Landscape mitigation plan (***Figure 29.11***) (***section 29.3.4***).
Operation		
Onshore Cable Corridor		
Effects on landscape character	See ***section 29.6.2.1.1***.	Establishment of heathland habitat and partial reinstatement of woodland at Raidsend at the end of construction phase.
Effects on landscape elements	See ***section 29.6.2.1.1***.	
Visual effects	See ***section 29.6.2.1.2***.	
Onshore Substation and National Grid Substation		
Effects on landscape character	See ***Table 29.11***.	Landscape mitigation plan (***Figure 29.11***) (***section 29.3.4***).
Visual effects	See ***Table 29.11***.	Landscape mitigation plan (***Figure 29.11***) (s***ection 29.3.4***).

199. The LVIA has been undertaken within a study area defined by a 3km buffer from the proposed onshore development area as shown on ***Figure 29.1***. A precautionary approach to the methodology has been taken for the purposes of the LVIA chapter within the PEIR so that all potential effects are assessed for inclusion. The LVIA study area defines a limit, based on professional judgement, beyond which it is considered unlikely for significant effects to arise.

200. This LVIA chapter provides a summary of the significant effects of the proposed East Anglia ONE North onshore infrastructure assessed in the full technical assessments contained within ***Appendix 29.2*** to ***29.4***.

201. The LVIA is based on a realistic worst-case described in ***section 29.3.2*** for the landfall, onshore cable route, onshore substation and National Grid substation - the elements of the East Anglia ONE North project within the proposed onshore development area that have potential to result in landscape and visual effects. The proposed East Anglia ONE North onshore substation assessed in the LVIA (and shown in the visualisations in ***Figures 29.13*** to ***29.25)*** is based on a Rochdale Envelope defined by a realistic worst-case 3D model representation of the onshore substation, with indicative dimensions for assessment as shown in ***Plate 29.1***.

202. Embedding mitigation into the proposed East Anglia ONE North project design is a type of primary mitigation and is an inherent aspect of the EIA process. ***Table 29.4*** outlines the key embedded mitigation relevant for the LVIA, which are embedded in the assessment of landscape and visual impacts of the onshore infrastructure. One of the primary forms of embedded mitigation for the onshore substation and National Grid substation, has been the selection of the substation site outside the AONB. The site selection process indicated the onshore substation and National Grid substation could be accommodated at the Grove Wood, Friston site without significant effects on the special qualities of the AONB.

203. Where further landscape mitigation measures have also been developed into the design of the onshore infrastructure, with specific regard to potential effects on landscape character and visual amenity, these are described in ***section 29.3.4***. The sensitivity of the landscape and visual receptors in the LVIA study area has been a key consideration in the siting and design of the onshore infrastructure. Furthermore, the capacity of the landscape to accommodate the onshore infrastructure has been assessed in relation to the natural screening afforded by landform, woodlands, trees and hedgerows.

204. The onshore substation location and National Grid substation benefits from some substantial existing hedgerows and woodland blocks within the local area, in particular Grove Wood and Laurel Covert. The extent and height of mature

woodland at Grove Wood/Laurel Covert will provide substantial screening of the area north of Grove Wood, providing mitigation of landscape and visual effects from the outset, together with other policy woodlands around Friston House, shelterbelts at Long Covert and some substantial hedgerow field boundaries.

205. There are notable opportunities for deliverable and effective mitigation of the landscape and visual impacts of the onshore substation in the form of new woodland planting. The extent of mitigation planting incorporated into the design is presented on ***Figure 29.11*** and mostly comprises indigenous woodland species planted around the onshore substation and National Grid substation. The appearance of the onshore substation and National Grid infrastructure will be influenced by the establishment and growth of these areas of woodland planting over time providing progressive screening, from an initially limited level of screening when first planted, through partial screening during establishment to full and effective mitigation at approximately 15 years post planting. Between 10 to 15 years post-planting, fully established trees are assumed to be retaining good vigour and starting to achieve good height with tree crowns spreading and are expected to provide significant screening of the onshore substation. Photomontage visualisations showing predicted views of the onshore substation are shown without mitigation and with the landscape mitigation (***Figure 29.11)*** at 15 years post-planting in ***Figures 29.13*** to ***29.25***.

206. The landscape mitigation proposed in ***Figure 29.11*** will be subject to review and amendment following receipt of consultation responses to this chapter. Additional mitigation requirements will be reviewed and discussed with statutory and non-statutory consultees, and landowners throughout the Section 42 consultation period and via ongoing consultation to feed into further mitigation proposals for the DCO application.

207. The LVIA assesses both construction stage and operational landscape and visual effects of the landfall, onshore cable route, onshore substation and National Grid substation in ***section 29.6.1*** (construction stage) and ***section 29.6.2*** (operational).

29.10.1 Landscape and Visual Effects During Construction

208. The construction of the landfall is assessed as having **significant**, but short-term and temporary effects on the landscape character of a localised area of the Estate Sandlands LCT and the Suffolk Coast and Heaths AONB, resulting from the HDD compound and construction of transition bays to the north of Thorpeness. The construction of the landfall will also result in **significant**, but short-term and temporary effects on the views experienced by residents of the northern and western edges of Thorpeness; motorists travelling on a short section of the B1353 to the east of Thorpeness; and people walking on short

sections of the Suffolk Coastal Path and Sandling's Walk where the route of these paths passes the landfall.

209. The construction of the onshore cable route is assessed as having **significant**, but short-term and temporary effects on a limited number of hedgerows in the Estate Sandlands LCT and on mature woodland at Aldeburgh Road (Raidsend), on land to the south of Aldringham Court, where up to 0.9ha of mature woodland will be felled to facilitate the crossing of Aldeburgh Road. As result, there will be significant effects resulting from the loss of woodland, localised significant effects on the perceived landscape character and visual amenity experienced from local residences and the B1122 Aldeburgh Road.

210. The construction of the onshore cable route is assessed as having **significant**, but short-term and temporary effects on the landscape character of the Estate Sandlands and Ancient Estate Claylands LCTs, within and immediately adjacent to the onshore cable route. The construction of the onshore cable route will introduce new elements within these LCTs during the construction period, which will temporarily change the character of the landscape and pattern of elements within the onshore cable route.

211. The effects of the construction of the onshore cable route have been assessed against the special qualities of the AONB. The effects of the construction of the onshore cable route on the landscape character of the AONB are assessed as significant, but short-term and temporary between the landfall to the north of Thorpeness, Sizewell Gap Road and the edge of the AONB near Leiston (Area A). Along this localised section of the cable route during the construction period, effects are assessed as being **significant**, but short-term and temporary on the landscape/scenic quality, relative wildness, tranquillity and natural heritage features of this localised area within the AONB. The effect of the construction of the onshore cable route on the special qualities of the wider AONB within the LVIA study area (Areas B and C) is assessed as **not significant**, short-term and temporary.

212. The onshore cable route construction is assessed as having **significant**, short-term and temporary visual effects on views experienced by residents from the edges of Aldringham, Coldfair Green and Friston that are adjacent to and are likely to have views of the construction of the onshore cable route. **Significant**, short-term and temporary visual effects are assessed as occurring to views experienced by motorists over short sections of the B1353 Thorpeness Road, B1122 Aldeburgh Road, B1069 Snape Road and B1121 Aldeburgh – Saxmundham Road; and on views experienced by walkers over short sections of the Suffolk Coastal Path, the Sandlings Walk and the Suffolk Coastal Cycle Route where these routes cross the onshore cable route. The visual effects of the

construction of the onshore cable route are not significant on views experienced from the large majority of these transport and recreational routes.

213. The onshore substation and National Grid substation are located to the north of the village of Friston and to the north of Grove Wood/Grove Road, as shown on ***Figure 29.4***.

214. The main area where changes to the perceived character occur as a result of the construction of the onshore substation and National Grid infrastructure is within a localised area of the Ancient Estate Claylands LCT (01) and Estate Sandlands LCT (07) to the north of Friston, between Grove Road and Fristonmoor. **Significant**, but short-term and temporary effects on the character of the landscape are assessed as occurring within a localised area of approximately 1km around the onshore substation and National Grid substation.

215. The construction of the onshore substation and National Grid substation will have **not significant** effects on the character or special qualities of the AONB. The onshore substation and National Grid substation are located outside the AONB and its immediate setting. The special qualities of the AONB will not be subject to significant effects as a result of the construction of the onshore substation and National Grid infrastructure, primarily due the distance of the construction of the onshore substation and National Grid infrastructure from the AONB and their limited visibility from within the AONB.

216. The undulating agricultural land and large woodland blocks at Grove Wood and Laurel Covert will provide notable visual containment of the onshore substation and National Grid substation in the landscape. In particular, they entirely screen views of the onshore substation in views from the east (such as from Knodishall/Coldfair Green). In views from areas where the onshore substation and National Grid substation will be visible, Grove Wood and Laurel Covert provide visual containment in terms of the spread of development vertically, since these woodlands are higher than the onshore substation and National Grid substation construction works.

217. Despite the notable screening provided in the local landscape, the construction of the onshore substation and National Grid substation are assessed as having **significant** visual effects on residents of Friston, as represented by Viewpoints 1, 2, 4, and 9; people walking on the local public right of way network to the north of Friston (between Friston and Fristonmoor) as represented by Viewpoints 2, 5; residents of scattered rural dwellings near Friston, as represented by Viewpoints 5 and 8; motorists travelling on the B1121 Saxmundham Road, to the north of Friston, as represented by Viewpoint 8; and motorists/cyclists travelling on Grove Road immediately passing the onshore substation and National Grid substation,

between Friston and Grove Wood. These **significant** visual effects would all occur within approximately 1.1 km of the onshore substation, making them localised, and they will also occur temporarily over the short-term, during the construction period.

29.10.2 Landscape and Visual Effects During Operation

218. The Planning Inspectorate (2017) has provided comments in their scoping opinion on matters that can be scoped out of the EIA and agreed that the following landscape and visual matters could be scoped out of the assessment:

- Landscape and visual impacts of the landfall during operation.
- Landscape and visual impact of the onshore cable route during operation (with the exception of the removal of woodland at the Aldeburgh Road crossing (Raidsend) which is assessed as an operational effect following consultation through the LVIA Expert Topic Group).

219. In both cases, following reinstatement works, the underground infrastructure at the landfall and within the onshore cable route is unlikely to result in significant effects and these matters are scoped out of the LVIA, as agreed with the Planning Inspectorate.

220. The removal of woodland at the Aldeburgh Road crossing (Raidsend) is assessed as an operational effect. The physical loss of mature woodland as a result of the onshore cable route occurs at Raidsend, on land to the south of Aldringham Court, where up to 0.9ha of mature woodland will be felled to facilitate the crossing of Aldeburgh Road. The Applicant has committed to reducing the cable swathe to 16.1m for East Anglia ONE North alone, to retain as many trees as possible at this location. The physical effect and effect on local landscape character of the Estate Sandlands LCT/Hundred River Valley SLA, due to the physical loss of mature woodland at Raidsend, is however assessed as **significant**, long-term and permanent. The changes to the setting of the AONB during the operational period, as a result of the felling of mature woodland to facilitate the crossing of Aldeburgh Road, are assessed as **not significant**.

221. The loss of mature woodland as a result of the onshore cable route at Raidsend will also give rise to visual effects where people experience changes in views that are currently influenced by this woodland in the baseline. The felling of this area of mature woodland at Raidsend will result in **significant**, long-term and permanent effects to views experienced by motorists from a short section of the B1122 to the south of Aldringham and to views experienced by residents of the local area around Aldeburgh Road and Fitches Lane, resulting in more open views on either side of the road (which are currently contained by the woodland).

222. The operation of the onshore substation and National Grid substation will result in **significant**, long-term and permanent effects on a localised area of the Ancient Estate Claylands LCT (01) and Estate Sandlands LCT (07) to the north of Friston, between Grove Road and Fristonmoor, within a localised area of approximately 1km around the onshore substation and National Grid substation.

223. Despite the notable screening provided in the local landscape, the operation of the onshore substation and National Grid substation is assessed as having **significant,** long-term and temporary visual effects on residents of parts of Friston, as represented by Viewpoints 1, 2, 4, and 9; people walking on the local public right of way network to the north of Friston (between Friston and Fristonmoor) as represented by Viewpoints 2, 5; residents of scattered rural dwellings near Friston, as represented by Viewpoints 5 and 8; and motorists/cyclists travelling on Grove Road immediately passing the onshore substation and National Grid substation, between Friston and Grove Wood.

224. Areas of woodland and hedgerows planted as part of the landscape mitigation plan during the construction phase, described in ***section 29.3.4*** and shown in ***Figure 29.11*** are assumed to have established and will be showing good vigour during the operational phase. The visual effects of the onshore substation and National Grid substation will be effectively mitigated 15 years post-construction, by the notable screening provided by fully established trees coming into maturity, which are assumed to be retaining good vigour and starting to achieve good height with tree crowns spreading. The visual effects of the onshore substation and National grid substation, assessed with mitigation at 15 years post-planting, are only assessed as **significant**, long-term and permanent on motorists/cyclists travelling on Grove Road immediately passing the onshore substation and National Grid substation, and on residents of a limited area of Friston on Aldeburgh Road (Viewpoint 9) and Saxmundham Road (Viewpoint 8).

29.10.3 Concluding Statements

225. Having considered all of the issues, the conclusion reached in the LVIA is that in landscape and visual terms, it is considered that although the construction of the onshore infrastructure results in some significant effects on landscape character of the AONB and on visual amenity/views, these occur only from localised areas in close proximity to the onshore infrastructure, and are of short-term and temporary duration, during the construction of the landfall, onshore cable route, onshore substation and National Grid substation. Following reinstatement works, the underground infrastructure at the landfall and within the onshore cable route is unlikely to result in significant effects and these matters are scoped out of the LVIA altogether.

226. The approach taken in this LVIA chapter is highly precautionary. This LVIA chapter has focussed on identifying the magnitude of change in its narrowest sense to ensure that all significant effects are properly evaluated and considered (as opposed to, for example, assessing short-term construction landscape and visual effects as non-significant on the grounds of duration). This is discussed in ***section 29.3.3.4*** and ***section 29.3.3.5*** with respect to geographical extent and duration and reversibility, respectively. The evaluations of geographical extent is not combined in the assessment of the level of magnitude, but instead expresses the extent of the receptor that would experience a particular magnitude of change and therefore the geographical extents of the significant and non-significant effects. Duration and reversibility are not incorporated into the overall magnitude of change but are stated separately in relation to the assessed effects in determining significant and non-significant effects. This approach was agreed with the LVIA ETG and is viewed as ensuring a robust and effective LVIA is undertaken.

227. The operational effects of the onshore infrastructure primarily occur as a result of the operation of the onshore substation and National Grid substation, where significant effects on local landscape character and visual amenity/views occur within an area of approximately 1km from the onshore substation and National Grid substation. There are notable opportunities for deliverable and effective mitigation of the landscape and visual impacts of the onshore substation in the form of new woodland planting proposed in the landscape mitigation plan (***Figure 29.11***). The onshore substation and National Grid substation will have **significant** visual effects on views experienced by people within the local area near Friston (within around 1km) during the early part of the operational period, when young trees will be establishing with good vigour, but are likely to have limited screening effects in the landscape. The visual effects of the onshore substation and National Grid substation assessed with mitigation at 15 years post-planting, are assessed to becoming **not significant**, long-term and permanent on residents of Friston (Viewpoints 1, 2, 4, and 9); people walking on the local public right of way network to the north of Friston (Viewpoints 2 and 5); and residents of scattered rural dwellings near Friston (Viewpoints 5 and 8); with **significant** visual effects remaining only on motorists/cyclists travelling on Grove Road immediately passing the onshore substation and National Grid substation, and on residents of a limited area of Friston on Aldeburgh Road (Viewpoint 9) and Saxmundham Road (Viewpoint 8).

228. There is scope for the onshore infrastructure to be accommodated in landscape and visual terms. This indicates a professional judgement by an experienced chartered Landscape Architect of the ability of the landscape or view in question to accommodate the onshore infrastructure.

229. In coming to this conclusion, the LVIA also has regard to the following specific matters in reaching its opinion on the effects of the onshore infrastructure:

- The onshore infrastructure has been designed carefully, taking account of the potential impact on the landscape. Having regard to siting, operational and other relevant constraints the onshore infrastructure minimises harm to the landscape, providing reasonable mitigation where possible and appropriate. Virtually all nationally significant energy infrastructure projects will have effects on the landscape.
- The onshore infrastructure demonstrates good design in respect of landscape and visual amenity, with appropriate landscape mitigation proposals and design of the project to mitigate landscape and visual impacts.
- The relatively contained geographic extent of significant effects, which are largely contained to the narrow onshore cable corridor during construction and within a 1.1km area around the onshore substation and National Grid substation, such that significant effects that occur are specific to this particular area and are not widespread.
- The onshore substation and National Grid substation is located within a landscape with extensive mature woodland of large scale, which provides some capacity to absorb and provide screening of the onshore infrastructure.
- The site selection has had regard to the purposes of the nationally designated Suffolk Coast and Heaths AONB. The onshore substation and National Grid substation are located at distance outside the AONB, which avoids compromising the long-term purposes of AONB designation and have been designed sensitively given the various siting, operational, and other relevant constraints.

29.11References

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