

# **East Anglia ONE North Offshore Windfarm**

## **Appendix 21.2**

### **Land Use Cumulative Impact Assessment with the Proposed East Anglia TWO Project**

#### **Environmental Statement Volume 3**

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**Appendix 21.2** is supported by the tables listed below.

Table Number	Title
<b>Table A21.2.1</b>	Scenario 1 Realistic Worst Case Assumptions
<b>Table A21.2.2</b>	Scenario 2 Realistic Worst Case Assumptions
<b>Table A21.2.3</b>	Summary of Scenario 1 and Scenario 2 Realistic Worst Case Assumptions

## Glossary of Acronyms

AIS	Air Insulated Switchgear
ALC	Agricultural Land Classification
CCS	Construction Consolidation Sites
CIA	Cumulative Impact Assessment
DCO	Development Consent Order
ES	Environmental Statement
ESS	Environmental Stewardship Scheme
GIS	Gas Insulated Switchgear
HDD	Horizontal Directional Drilling
SWDP	Surface Water Drainage Management Plan

## Glossary of Terminology

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

National electricity grid	The high voltage electricity transmission network in England and Wales owned and maintained by National Grid Electricity Transmission
National Grid infrastructure	A National Grid substation, cable sealing end compounds, cable sealing end (with circuit breaker) compound, underground cabling and National Grid overhead line realignment works to facilitate connection to the national electricity grid, all of which will be consented as part of the proposed East Anglia ONE North project Development Consent Order but will be National Grid owned assets.
National Grid overhead line realignment works	Works required to upgrade the existing electricity pylons and overhead lines (including cable sealing end compounds and cable sealing end (with circuit breaker) compound) to transport electricity from the National Grid substation to the national electricity grid.
National Grid overhead line realignment works area	The proposed area for National Grid overhead line realignment works.
National Grid substation	The substation (including all of the electrical equipment within it) necessary to connect the electricity generated by the proposed East Anglia ONE North project to the national electricity grid which will be owned by National Grid but is being consented as part of the proposed East Anglia ONE North project Development Consent Order.
National Grid substation location	The proposed location of the National Grid substation.
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 (which may be laid directly within a trench, or laid in cable ducts or protective covers), up to two fibre optic cables and up to two distributed temperature sensing cables.
Onshore development area	The area in which the landfall, onshore cable corridor, onshore substation, landscaping and ecological mitigation areas, temporary construction facilities (such as access roads and construction consolidation sites), and the National Grid Infrastructure will be located.
Onshore infrastructure	The combined name for all of the onshore infrastructure associated with the proposed East Anglia ONE North project from landfall to the connection to the national electricity grid.
Onshore preparation works	Activities to be undertaken prior to formal commencement of onshore construction such as pre-planting of landscaping works, archaeological

	investigations, environmental and engineering surveys, diversion and laying of services, and highway alterations.
Onshore substation	The East Anglia ONE North substation and all of the electrical equipment within the onshore substation and connecting to the National Grid infrastructure.
Onshore substation location	The proposed location of the onshore substation for the proposed East Anglia ONE North project.
Transition bay	Underground structures at the landfall that house the joints between the offshore export cables and the onshore cables.

## 21.2 Land Use Cumulative Impact Assessment with the Proposed East Anglia TWO Project

### 21.1 Introduction

1. This appendix covers the Cumulative Impact Assessment (CIA) of the proposed East Anglia ONE North project with the proposed East Anglia TWO project in relation to land use and agriculture.
2. The East Anglia TWO offshore windfarm project (the proposed East Anglia TWO project) is also in the application phase. The proposed East Anglia TWO project has a separate Development Consent Order (DCO) which has been submitted at the same time as the proposed East Anglia ONE North project. The two projects share the same landfall location and onshore cable corridor and the two onshore substations are co-located, and connect into the same National Grid substation.
3. The land use and agriculture proposed East Anglia ONE North project CIA will therefore initially consider the cumulative impact with only the proposed East Anglia TWO project against two different construction scenarios (i.e. construction of the two projects simultaneously and sequentially). The realistic worst case scenario of each impact is then carried through to the main body of the CIA which considers other developments which have been screened into the CIA.
4. For a more detailed description of the CIA please refer to **Chapter 5 EIA Methodology**.

### 21.2 Construction Scenarios Realistic Worst Case Parameters

5. This appendix considers the proposed East Anglia ONE North project and the proposed East Anglia TWO project under two construction scenarios:
  - Scenario 1 - the proposed East Anglia ONE North project and proposed East Anglia TWO project are built simultaneously; and
  - Scenario 2 - the proposed East Anglia ONE North project and the proposed East Anglia TWO project are constructed sequentially.
6. As discussed in **section 21.1**, the realistic worst case (based on the assessment of these two construction scenarios) for each impact is then carried through to the wider CIA which considers other developments, projects or plans which have been screened into the CIA for the proposed East Anglia ONE North project.

7. It should be noted that the operational phase impacts on land use and agriculture will be the same irrespective of the construction scenario. Therefore, operational impacts identified in scenario 1 will be the same as those for scenario 2.
8. Embedded and additional mitigation measures for the proposed East Anglia ONE North project and proposed East Anglia TWO project will be the same. These are detailed in **Chapter 21 Land Use**.

### 21.2.1 Scenario 1

9. **Table A21.2.1** presents the realistic worst case parameters of scenario 1. In this instance, the proposed East Anglia ONE North project and proposed East Anglia TWO project are built simultaneously. Areas provided for onshore infrastructure are maximum footprints with indicative dimensions provided in brackets.

**Table A21.2.1 Scenario 1 Realistic Worst Case**

Impact	Parameter	Notes
<b>Construction</b>		
Impacts related to the landfall	HDD temporary working area: 13,300m <sup>2</sup> (70m x 190m)  Transition bay temporary working area (for 4 transition bays): 3,108m <sup>2</sup> (37m x 42m)  Landfall Construction Consolidation Site (CCS) (x1): 14,080m <sup>2</sup> (88m x 160m)  Landfall transition bays approximate quantity of spoil material (for 4 transition bays): 908m <sup>3</sup>	
Impacts related to the onshore cable route	Onshore cable route: 581,824m <sup>2</sup> (9,091m x 64m)  Jointing bay temporary working area: 570m <sup>2</sup> (30.6m x 18.6m). Total for 76 jointing bays: 43,320m <sup>2</sup> (570m <sup>2</sup> x 76)  HDD (retained as an option to cross SPA / SSSI): <ul style="list-style-type: none"> <li>• Entrance pit temporary working area (x1): 12,250m<sup>2</sup> (175m x 70m)</li> <li>• Exit pit temporary working area (x1): 5,250m<sup>2</sup> (175m x 30m)</li> </ul> Onshore cable route large CCS (1): 33,000m <sup>2</sup> (165m x 200m).  Onshore cable route medium CCS (2): 28,160m <sup>2</sup> total (88m x 160m per each medium CCS)	

Impact	Parameter	Notes
	<p>Onshore cable route small CCS (2): 12,000m<sup>2</sup> total (120m x 50m per each small CCS)</p> <p>Total footprint of all onshore cable route CCS: 73,160m<sup>2</sup></p> <p>Onshore cable route laydown area: 1,000m<sup>2</sup></p> <p>Onshore cable route haul road between landfall and Snape Road (7,331m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 40,435m<sup>2</sup></p> <p>Onshore cable route and substation access haul road (1,570m in length x 9m wide): 14,130m<sup>2</sup></p> <p>Temporary access roads (957m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 5,231m<sup>2</sup></p> <p>Onshore cable trench approximate quantity of spoil material: 26,636m<sup>3</sup></p>	
Impacts related to the onshore substations	<p>Onshore substation CCS (x2): 34,200m<sup>2</sup> (190m x 90m per each onshore substation)</p> <p>Permanent footprint (used as CCS during construction) (x2): 72,200m<sup>2</sup> (190m x 190m per each onshore substation)</p> <p>Substation operational access road: 13,600m<sup>2</sup> (1,700m x 8m)</p> <p>Onshore substation approximate quantity of spoil material: 38,102m<sup>3</sup></p>	
Impacts related to the National Grid Infrastructure	<p>National Grid CCS: 23,350m<sup>2</sup></p> <p>National Grid operational substation (AIS technology) (used as a CCS during construction): 44,950m<sup>2</sup> (310m x 145m)</p> <p>Temporary pylon/mast temporary working area (x4): 10,000m<sup>2</sup> (2,500m<sup>2</sup> per each temporary pylon)</p> <p>Permanent pylon permanent footprint (x4): 1,600m<sup>2</sup> (400m<sup>2</sup> per each permanent pylon)</p> <p>Permanent pylon temporary working area (x4): 8,400m<sup>2</sup> (2,100m<sup>2</sup> per each permanent pylon)</p> <p>Overhead line realignment temporary working area: 5,000m<sup>2</sup></p> <p>Cable sealing end/Cable sealing end (with circuit breaker) compounds permanent</p>	<p>AIS technology is assessed as the worst case due to a larger footprint. Further detail regarding GIS technology is provided in <b>Chapter 6 Project Description</b>.</p>

Impact	Parameter	Notes
	<p>footprint: 10,000 m<sup>2</sup> (total for three compounds)</p> <p>Cable sealing end/Cable sealing end (with circuit breaker) compounds temporary working area: 30,000m<sup>2</sup> (total for three compounds)</p> <p>Temporary access road (for pylon works): (1,100m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 5,629m<sup>2</sup></p> <p>Permanent access road to sealing end compound: 1,850m<sup>2</sup> (500m x 3.7m)</p>	
<b>Operation</b>		
Impacts related to the landfall	<p>4 transition bays will be installed underground, each with an operational volume of 227m<sup>3</sup></p> <p>No above ground infrastructure</p>	
Impacts related to the onshore cable route	<p>76 jointing bays will be installed underground, each with an operational volume of 77m<sup>3</sup></p> <p>152 link boxes will be installed underground (2 per jointing bay), each with an operational volume of 4m<sup>3</sup></p> <p>Potential ecological mitigation areas (4 areas, total of 61,200m<sup>2</sup>)</p> <p>No above ground infrastructure</p>	
Impacts related to the onshore substation	<p>Operational footprint (x2): 72,200m<sup>2</sup> (190m x 190m)</p> <p>Substation operational access road: 13,600m<sup>2</sup> (1,700m x 8m)</p> <p>Landscaping at the onshore substation and National Grid substation 227,800m<sup>2</sup></p>	
Impacts related to the National Grid Infrastructure	<p>National Grid operational substation (AIS technology): 44,950m<sup>2</sup> (310m x 145m)</p> <p>Pylon operational footprint (x4): 1,600m<sup>2</sup> (20m x 20m per each permanent pylon)</p> <p>Cable sealing end compound operational footprint: 10,000m<sup>2</sup> (for three sealing end compounds)</p> <p>Permanent access road to sealing end compound: 1,850m<sup>2</sup> (500m x 3.7m)</p>	<p>Four permanent pylons include up to three reconstructed/relocated pylons and up to one additional new pylon.</p> <p>AIS technology is assessed as the worst case due to a larger footprint. Further detail regarding GIS technology is provided in <b>Chapter 6 Project Description</b>.</p>

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

### 21.2.2 Scenario 2

10. Scenario 2, and **Table A21.2.2**, represents the realistic worst case in the eventuality that the proposed East Anglia ONE North project and proposed East Anglia TWO project are constructed sequentially. It should be noted that there is the commitment to progress construction of the proposed East Anglia ONE North project prior to commencing construction of the proposed East Anglia TWO project. Areas provided for onshore infrastructure are maximum footprints with indicative dimensions shown in brackets.
11. Under scenario 2, either the proposed East Anglia ONE North project or the proposed East Anglia TWO project could be constructed first. However, there will be no difference in impact regardless of which project is constructed first. The CIA presented in this ES is presented using the intended development strategy of the proposed East Anglia ONE North project being constructed first. However, in the eventuality that the proposed East Anglia TWO project is constructed first the impacts would be the same. Further detail regarding the sequential construction is provided in **Chapter 5 EIA Methodology**.

**Table A21.2.2 Scenario 2 Realistic Worst Case**

Impact	Proposed East Anglia ONE North Project Parameters	Proposed East Anglia TWO Project Parameters (on the assumption that the proposed East Anglia ONE North project is post-construction)	Notes
<b>Construction</b>			
Impacts related to the landfall	HDD temporary working area: 7,000m <sup>2</sup> (70m x 100m) Transition bay temporary working area (for 2 transition bays): 1,554m <sup>2</sup> (37m x 42m)	HDD temporary working area: 7,000m <sup>2</sup> (70m x 100m) Transition bay temporary working area (for 2 transition bays): 1,554m <sup>2</sup> (37m x 42m)	

Impact	Proposed East Anglia ONE North Project Parameters	Proposed East Anglia TWO Project Parameters (on the assumption that the proposed East Anglia ONE North project is post-construction)	Notes
	<p>Landfall Construction Consolidation Site (CCS) (x1): 7,040m<sup>2</sup> (88m x 80m)</p> <p>Landfall transition bays approximate quantity of spoil material (for 2 transition bays): 454m<sup>3</sup></p>	<p>Landfall Construction Consolidation Site (CCS) (x1): 7,040m<sup>2</sup> (88m x 80m)</p> <p>Landfall transition bays approximate quantity of spoil material (for 2 transition bays): 454m<sup>3</sup></p>	
Impacts related to the onshore cable route	<p>Onshore cable route: 290,912m<sup>2</sup> (9,091m x 32m)</p> <p>Jointing bay temporary working area: 570m<sup>2</sup> (30.6m x 18.6m). Total for 38 jointing bays: 21,660m<sup>2</sup> (570m<sup>2</sup> x 38)</p> <p>HDD (retained as an option to cross SPA / SSSI):</p> <p style="padding-left: 20px;">Entrance pit temporary working area (x1): 6,300m<sup>2</sup> (90m x 70m)</p> <p style="padding-left: 20px;">Exit pit temporary working area (x1): 2,700m<sup>2</sup> (90m x 30m)</p> <p>Onshore cable route large CCS (1): 16,500m<sup>2</sup> (165m x 100m).</p> <p>Onshore cable route medium CCS (2): 14,080m<sup>2</sup> total (88m x 80m per each medium CCS)</p> <p>Onshore cable route small CCS (2): 6,000m<sup>2</sup> total (60m x 50m per each small CCS)</p> <p>Total footprint of all onshore cable route CCS: 36,580m<sup>2</sup></p> <p>Onshore cable route laydown area: 1,000m<sup>2</sup></p> <p>Onshore cable route haul road between landfall and Snape Road (7,331m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 40,435m<sup>2</sup></p>	<p>Onshore cable route: 290,912m<sup>2</sup> (9,091m x 32m)</p> <p>Jointing bay temporary working area: 570m<sup>2</sup> (30.6m x 18.6m). Total for 38 jointing bays: 21,660m<sup>2</sup> (570m<sup>2</sup> x 38)</p> <p>HDD (retained as an option to cross SPA / SSSI):</p> <p style="padding-left: 20px;">Entrance pit temporary working area (x1): 6,300m<sup>2</sup> (90m x 70m)</p> <p style="padding-left: 20px;">Exit pit temporary working area (x1): 2,700m<sup>2</sup> (90m x 30m)</p> <p>Onshore cable route large CCS (1): 16,500m<sup>2</sup> (165m x 100m).</p> <p>Onshore cable route medium CCS (2): 14,080m<sup>2</sup> total (88m x 80m per each medium CCS)</p> <p>Onshore cable route small CCS (2): 6,000m<sup>2</sup> total (60m x 50m per each small CCS)</p> <p>Total footprint of all onshore cable route CCS: 36,580m<sup>2</sup></p> <p>Onshore cable route laydown area: 1,000m<sup>2</sup></p> <p>Onshore cable route haul road between landfall and Snape Road (7,331m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 40,435m<sup>2</sup></p>	

Impact	Proposed East Anglia ONE North Project Parameters	Proposed East Anglia TWO Project Parameters (on the assumption that the proposed East Anglia ONE North project is post-construction)	Notes
	<p>Onshore cable route and substation access haul road (1,570m in length x 9m wide): 14,130m<sup>2</sup></p> <p>Temporary access roads (957m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 5,231m<sup>2</sup></p> <p>Onshore cable trench approximate quantity of spoil material: 14,325m<sup>3</sup></p>	<p>Onshore cable route and substation access haul road (1,570m in length x 9m wide): 14,130m<sup>2</sup></p> <p>Temporary access roads (957m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 5,231m<sup>2</sup></p> <p>Onshore cable trench approximate quantity of spoil material: 14,325m<sup>3</sup></p>	
Impacts related to the onshore substation	<p>Onshore substation CCS: 17,100m<sup>2</sup> (190m x 90m)</p> <p>Permanent footprint (used as CCS during construction): 36,100m<sup>2</sup> (190m x 190m)</p> <p>Substation operational access road: 13,600m<sup>2</sup> (1,700m x 8m)</p> <p>Onshore substation approximate quantity of spoil material: 24,486m<sup>3</sup></p>	<p>Onshore substation CCS: 17,100m<sup>2</sup> (190m x 90m)</p> <p>Permanent footprint (used as CCS during construction): 36,100m<sup>2</sup> (190m x 190m)</p> <p>Onshore substation approximate quantity of spoil material: 24,486m<sup>3</sup></p>	Substation operational access road will be constructed as part of the proposed East Anglia ONE North project
Impacts related to the National Grid Infrastructure	<p>National Grid CCS: 23,350m<sup>2</sup></p> <p>National Grid operational substation (AIS technology) (used as a CCS during construction): 44,950m<sup>2</sup> (310m x 145m)</p> <p>Temporary pylon/mast temporary working area (x4): 10,000m<sup>2</sup> (2,500m<sup>2</sup> per each temporary pylon)</p> <p>Permanent pylon permanent footprint (x4): 1,600m<sup>2</sup> (400m<sup>2</sup> per each permanent pylon)</p> <p>Permanent pylon temporary working area (x4): 8,400m<sup>2</sup> (2,100m<sup>2</sup> per each permanent pylon)</p>	National Grid infrastructure will be constructed as part of the proposed East Anglia ONE North project	AIS technology is assessed as the worst case due to a larger footprint. Further detail regarding GIS technology is provided in <b>Chapter 6 Project Description</b> .

Impact	Proposed East Anglia ONE North Project Parameters	Proposed East Anglia TWO Project Parameters (on the assumption that the proposed East Anglia ONE North project is post-construction)	Notes
	<p>Overhead line realignment temporary working area: 5,000m<sup>2</sup></p> <p>Cable sealing end/Cable sealing end (with circuit breaker) compounds permanent footprint: 10,000 m<sup>2</sup> (total for three compounds)</p> <p>Cable sealing end/cable sealing end (with circuit breaker) compounds temporary working area: 30,000m<sup>2</sup> (total for three compounds)</p> <p>Temporary access road (for pylon works): (1,100m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 5,629m<sup>2</sup></p> <p>Permanent access road to sealing end compound: 1,850m<sup>2</sup> (500m x 3.7m)</p>		
<b>Operation</b>			
Impacts related to the landfall	<p>2 transition bays will be installed underground, each with an operational volume of 227m<sup>3</sup></p> <p>No above ground infrastructure</p>	<p>2 transition bays will be installed underground, each with an operational volume of 227m<sup>3</sup></p> <p>No above ground infrastructure</p>	
Impacts related to the onshore cable route	<p>38 jointing bays will be installed underground, each with an operational volume of 77m<sup>3</sup></p> <p>76 link boxes will be installed underground (2 per jointing bay), each with an operational volume of 4m<sup>3</sup></p> <p>Potential ecological mitigation areas (4 areas, total of 61,200m<sup>2</sup>)</p>	<p>38 jointing bays will be installed underground, each with an operational volume of 77m<sup>3</sup></p> <p>76 link boxes will be installed underground (2 per jointing bay), each with an operational volume of 4m<sup>3</sup></p> <p>No above ground infrastructure</p>	

Impact	Proposed East Anglia ONE North Project Parameters	Proposed East Anglia TWO Project Parameters (on the assumption that the proposed East Anglia ONE North project is post-construction)	Notes
	No above ground infrastructure		
Impacts related to the onshore substation	Operational footprint: 36,100m <sup>2</sup> (190m x 190m) Substation operational access road: 13,600m <sup>2</sup> (1,700m x 8m)	Operational footprint: 36,100m <sup>2</sup> (190m x 190m)	The operational footprint does not include the additional landscaping footprint.  Substation operational access road will be constructed as part of the proposed East Anglia ONE North project
Impacts related to the National Grid Infrastructure	National Grid operational substation (AIS technology): 44,950m <sup>2</sup> (310m x 145m)  Pylon operational footprint (x4): 1,600m <sup>2</sup> (20m x 20m per each permanent pylon)  Cable sealing end compound operational footprint: 10,000m <sup>2</sup> (for three sealing end compounds)  Permanent access road to sealing end compound: 1,850m <sup>2</sup> (500m x 3.7m)	National Grid infrastructure will be constructed as part of the proposed East Anglia ONE North project	Four permanent pylons include up to three reconstructed/relocated pylons and up to one additional new pylon.  The operational footprint does not include the additional landscaping footprint.  AIS technology is assessed as the worst case due to a larger footprint. Further detail regarding GIS technology is provided in <b>Chapter 6 Project Description</b> .
<b>Decommissioning</b>			
No decision has been made regarding the final decommissioning policy for the onshore infrastructure as it is recognised that industry best practice, rules and legislation change over time. An Onshore Decommissioning Plan will be provided, as secured under the requirements of the draft DCO. The onshore substation will likely be removed and be reused or recycled. It is anticipated that the onshore cable would be decommissioned (de-energised) and either the cables and jointing bays left <i>in situ</i> or removed depending on the requirements of the Onshore Decommissioning Plan approved by the Local Planning Authority. The detail and scope of the decommissioning works will be determined by the			

Impact	Proposed East Anglia ONE North Project Parameters	Proposed East Anglia TWO Project Parameters (on the assumption that the proposed East Anglia ONE North project is post-construction)	Notes
relevant legislation and guidance at the time of decommissioning and agreed with the regulator. As such, for the purposes of a worst-case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase.			

### 21.3 Cumulative Impact Assessment

12. In terms of construction impacts relating to land use and agriculture, cumulative impacts are predominantly dictated by:
- The total onshore footprint of the construction works;
  - The quality of the land which falls within this construction footprint; and
  - The length of the expected construction duration.
13. The following sections discuss which of the two construction scenarios detailed in **section 21.2** will be the realistic worst case in terms of cumulative impacts to land use and agriculture.

#### 21.3.1 Impact 1: Land Taken out of Existing Use

14. Land would be directly taken out of existing use or isolated due to construction activities and effectively taken out of use. During construction scenario 1 or 2, land taken out of existing use due to the onshore infrastructure will be greater than the footprint size affected by the proposed East Anglia ONE North project alone (**Table A21.2.1** and **Table A21.2.2**). The areas of land taken out of use by the four potential ecological mitigation areas and the proposed landscaping detailed within the Outline Landscape and Ecological Management Strategy (OLEMS) (document reference 8.7), submitted with this DCO application, will be no greater than that identified for the proposed East Anglia ONE North project alone.
15. Therefore, taking into account the combined footprints of the proposed East Anglia ONE North and East Anglia TWO projects onshore infrastructure, this represents a small contribution to regional resource of farmed land and the areas of land take ranging from Agricultural Land Classification (ALC) Grades 2-4, the sensitivity of this land is of therefore assessed as medium for the landfall and onshore cable route, and high sensitivity for the onshore substation and National Grid infrastructure due to the higher proportion of Grade 2 land in this area, using a precautionary approach.

16. Under construction scenario 1, this impact would have a negligible magnitude of effect. Under scenario 2, although there is an increase in construction phase duration, this would not increase the magnitude of effect due to the area being impacted remaining small in terms of regional resource (0.015% of farmed land in Suffolk will be impacted by the combined footprints of the proposed East Anglia ONE North and proposed East Anglia TWO projects) the ability to reinstate a large portion of the land impacted by the construction footprint and return it to its original use. Therefore, the impact significance is considered to be **minor adverse** for scenario 1 and scenario 2.
17. The Applicant will engage in consultation with those landowners affected to agree the necessary compensations.

### 21.3.2 Impact 2: Impact to Environmental Stewardship Schemes

18. During the construction period, there would be the potential for impacts on Environmental Stewardship schemes (ESS). The effect on individual landowners / occupiers is likely to be specific to their own scheme and may potentially result in ecological and/or financial implications. During construction scenario 1 or 2, land taken out of existing use will be greater than the footprint size affected by the proposed East Anglia ONE North project alone (**Table A21.2.1** and **Table A21.2.2**). The areas of land taken out of use by the four potential ecological mitigation areas and the proposed landscaping detailed within the Outline Landscape and Ecological Management Strategy (OLEMS), submitted with this DCO application, will be no greater than that identified for the proposed East Anglia ONE North project alone.
19. Taking into account the combined footprints of the proposed East Anglia ONE North and East Anglia TWO projects, this represents a small contribution to the regional resource of ESS and the level of the ESS impacted being a lower, entry level area, the sensitivity of this receptor is assessed as being medium. Under construction scenario 1, this impact would have a negligible magnitude. Under scenario 2, although there is an increase in construction phase duration, this would not increase the magnitude of effect due to the area being impacted remaining small in terms of regional resource and the ability to reinstate these areas of ESS following the construction phase. Therefore, the impact significance is considered to be **minor adverse**.
20. The Applicant will engage in consultation with those landowners affected to agree the necessary compensations, and land will be reinstated following construction in such a way that similar ESS agreements being re-established will not be inhibited.

### 21.3.3 Impact 3: Impact to Land Drainage

21. Construction works such as excavation and stockpiling of soils has the potential to cause an impact to the natural and artificial field drainage systems. It would be necessary to truncate the drainage systems temporarily during excavation and installation and reinstate following construction. Given the soil types found within the onshore development area, some sections would have existing field drainage systems in place. The sensitivity of the receptor is considered to be high overall as the soil is vulnerable to erosion or structural damage.
22. During construction scenario 1 or 2, the soil resource impacted will be double that affected by the proposed East Anglia ONE North project alone. The sensitivity of the receptor remains high, as it is for the proposed East Anglia ONE North project alone.
23. The magnitude of the effect is considered to remain negligible for scenario 1 and scenario 2 due to the embedded mitigation measures, including the SWDP. Therefore, the impact under scenario 1 and scenario 2 will be of **minor adverse** significance.

### 21.3.4 Impact 4: Degradation to Natural Resource

24. There is the potential for soils to be compacted and soil structure to deteriorate during the construction of the proposed East Anglia ONE North and East Anglia TWO projects. The effect of this impact is usually reduced fertility and crop yields. During construction scenario 1 or 2, land taken out of existing use will be double the footprint size than that affected by the proposed East Anglia ONE North project alone.
25. The soils within the onshore development area are dominated by freely draining slightly acid sandy soils, therefore susceptible to compaction, and difficult to handle during wet periods using machinery without causing structural degradation. Given these characteristics, the soil resource at the onshore development area is conservatively considered to be of high sensitivity with respect to potential for degradation during the construction period.
26. The magnitude of the effect is considered to be low for scenario 1. This magnitude will increase to medium under construction scenario 2 due to the increase in construction phase duration. Under construction scenario 2 as the worst case, the impact is considered to be of major adverse significance. Additional mitigation measures which could include the Applicant consulting on private agreements with landowners/occupiers regarding any measures required in relation to crop loss incurred as an indirect consequence of degradation of the soil resource during the construction phase of the proposed East Anglia ONE North project.

This additional mitigation results in the residual impact on land drainage under scenario 2 being **minor adverse**.

### 21.3.5 Impact 5: Impact to Utilities

27. The onshore cable route of the proposed East Anglia ONE North project alone has been selected to avoid major buried utilities; however, the additional footprint affected by the proposed East Anglia ONE North and East Anglia TWO projects together (under scenario 1 or 2), there is potential that additional utilities will intersect with the onshore infrastructure than for the proposed East Anglia ONE North project alone.
28. However, the Applicant would be required to contact potentially affected utility providers and identify the location of existing services on the ground prior to construction. Major utilities will be covered with the use of crossing agreements. The Applicant would undertake utility crossings or diversions in accordance with the appropriate standards for such crossings or works. The continuation of water supplies will be ensured. Therefore, **no impacts** associated with existing utilities are anticipated during the construction of the proposed East Anglia ONE North and East Anglia TWO projects regardless of construction scenario.

### 21.3.6 Impact 6: Impact to Common Land

29. There are six discreet areas of common land that are directly adjacent, or close vicinity, to the onshore development area but no areas of common land fall within the onshore development area. Due to the embedded mitigation measures, there will be no interaction with areas of common land (above or below ground), including Thorpeness Common.
30. Areas of common land will not be subject to closures or loss of access because they can be accessed from the side which is not adjacent to the onshore development area, therefore users of the common land will not be affected in terms of access. There will be **no impact** to common land.

## 21.4 Cumulative Impacts Assessment during Operation

31. During the operational phase of the proposed East Anglia ONE North project alone, there will be no above ground infrastructure at the landfall or along the onshore cable route, and only a small area of land take will be attributed to four potential ecological mitigation areas identified in **section 21.6.1.1.1** of this chapter. Permanent infrastructure is associated with the onshore substation and National Grid infrastructure and the proposed landscaping detailed within the OLEMS, submitted with this DCO application, identified in **section 21.6.1.1.2** of this chapter.

32. During the cumulative operational phase of the proposed East Anglia ONE North and East Anglia TWO projects, similarly there will be no above ground infrastructure at the landfall or along the onshore cable route, and there will be no greater areas attributed to potential ecological mitigation areas as for the proposed East Anglia ONE North project alone. Permanent infrastructure is associated with the East Anglia ONE North and East Anglia TWO onshore substations and National Grid infrastructure, therefore the cumulative operational footprint at the substation site will be greater than that for the proposed East Anglia ONE North project alone. The land taken by the proposed landscaping will be no greater than that proposed for the East Anglia ONE North project alone.
33. The East Anglia ONE North and East Anglia TWO onshore substations will be co-located meaning that no differing parcels of land (with an increased sensitivity) will be affected by the addition of the second substation. The footprint increase from the proposed East Anglia ONE North project alone is not considerable when agricultural activities are considered at a regional level.
34. It should additionally be noted that the East Anglia TWO onshore substation will be subject to the same mitigation measures as those applied to the East Anglia ONE North onshore substation.
35. Overall, cumulative operational impacts on land use and agriculture for the proposed East Anglia ONE North and East Anglia TWO projects will be no greater than operational impacts for the proposed East Anglia ONE North project alone.

## 21.5 Summary

36. **Table A21.2.3** gives an overarching summary of which of the two construction scenarios, detailed above, will be the realistic worst case in terms of impacts relating to land use and agriculture.

**Table A21.2.3 Summary of Scenario 1 and Scenario 2 Realistic Worst Case Assumptions**

Impact	Worst Case	Notes
Impact 1: Land taken out of Existing Use	Scenario 2	Impact is the same regardless of construction scenario however the duration is longer for scenario 2
Impact 2: Impact to ESS	Scenario 2	Impact is the same regardless of construction scenario however the duration is longer for scenario 2
Impact 3: Impact to Land Drainage	Scenario 2	Impact is the same regardless of construction scenario
Impact 4: Degradation to Natural Resource	n/a	Impact is the same regardless of construction scenario due to reinstatement of land drains as part of the construction of each onshore cable route section

Impact	Worst Case	Notes
Impact 5: Impact to Utilities	n/a	Impact is the same regardless of construction scenario
Impact 6: Impact to Common Land	n/a	No impact regardless of construction scenario

37. Overall, construction scenario 2 creates a realistic worst case in terms of impacts to land use and agriculture. Therefore, scenario 2 will be carried through into the wider CIA with other developments, see **section 21.7** in **Chapter 21 Land Use**.

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